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GAS JOURNAL

LIGHT • HEAT • POWER • BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

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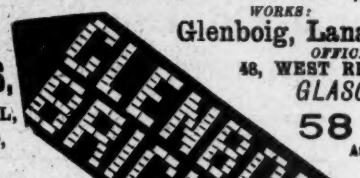

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VOL. CLXVI., No. 3186.] WEDNESDAY, JUNE 4, 1924. [76TH YEAR.

EDITORIAL NOTES.

As Others See the Gas Exhibit.

THE gas industry has cause to rejoice over the spontaneous and unanimous praise that comes from all quarters regarding the Gas Exhibit at Wembley. This to us is a matter of gratification, because we said on a previous occasion the things that really matter are what those outside the industry think of the display, and the measure with which it fulfils the objects of its joint promoters and supporters. If the latter all criticized adversely—and they do not—and the world outside the industry applauded by visits, interest, and expressions of admiration, we should still be satisfied. Fortunately, there is no reduction of satisfaction by the general verdict of the industry itself. This verdict is as complimentary and pleasing as that of the public. There are, however, a small number of gas men who, we are afraid, do not appreciate fully the position and conditions, and who are somewhat old-fashioned in respect of the current needs of propaganda display, particularly at Wembley, and who look upon the Gas Exhibit as "small." If we compare it with the British Empire Exhibition as a whole, it is small. It is but a drop in a big bucket. But there is quality and attraction in it. There is a great difference between bulk and essence. It is a concentration which will not tire, but has proved interest for the multitude, whatever the social position or the interests of the units; it is not an accumulation of things, but something which impresses diversity of application by types. If the few gas men who at present prefer bulk to essence will consider well these points, we think their ideas will soon veer to the modern approved epitome method of display, from which issue widespread and lasting results, which confirm the superior characteristics of quality and effectiveness.

Looking round the mammoth Exhibition, we see the materialization of a large variety of conception as to what a display should be. What is found is that the old-fashioned order of things in this respect makes little appeal to the public; while the new order of display and demonstration practically monopolizes attention. Attention has its degrees, as signified by the extent of the retention of interest; and there is an abounding retention of interest in the Gas Exhibit. Attention and interest have extended to the technical and daily newspapers. We have during the last few days been curious to ascertain what are the writers' views; and it has not surprised us to find that they, unattached as they are to the gas industry, have consistently something good to say in their own way as to the achievement of the organizers. The British Empire Section of "The Times" alludes to the coal gas industry as being "well served" by the Gas Exhibit; and it is said that to see there the diversity of uses to which coal and its products can be applied is an education complete in itself—in fact "the exhibit testifies to the amazing versatility of our greatest national asset"—coal. "The novelty and artistic effects" of the domestic section are referred to in another article in the paper; but it is thought that in the industrial section "the true adaptability of gas is most apparent." The inspection of the exhibit left upon the writer's mind the impression that "there would seem to be few, if any, purposes of power and heating which gas cannot serve." The last lines in the article aptly sum up the contributor's views: "Progress of any kind is interesting; but the appeal here is a universal one, as the visitor will realize if he tries to visualize a world without gas. Smoke abolition alone should put gas in the front rank of industrial assets, and the other many advantages of its use can hardly fail to be brought home by this collective expression of a national industry." That is good. As to smoke abolition, in an article on the Gas Exhibit in the "Daily Chronicle," Wembley itself is described by Leonard Spray as a "smokeless city;" and the same popular writer also makes several good points regarding the educative value of the display. The educational side of the exhibit has likewise appealed to the engineering correspondent of the "Daily Telegraph."

A writer in "The Times" Trade and Engineering Supplement has been impressed by the fact that the Exhibition exemplifies both how not to exhibit and how to do so. Some of the exhibits he finds, especially those which purport to represent whole industries or combinations of great firms, seem to be presented under the impression that they speak sufficiently for themselves; and at other stands he hears from the attendants well-worn, stereotyped phrases and statements. But, fortunately, he finds there are other combined exhibits the organizers of which take a wider view of their opportunities, and indeed of their duty to the public. He instances the display of the Gas Exhibit Committee—the result presented being the fruit of the prolonged practical acquaintance of the British Commercial Gas Association with the propaganda which all combined exhibits are seeking to launch. "The lay-out gives the maximum of information to all classes of its intended clientèle in the readiest and most attractive way." And he epitomizes his views by saying that it is an admirable display, with nothing of the showroom about it.

These references to the disinterested opinions of writers accustomed to make observation upon the affairs of the times and of men, reflect the universal view of men and women outside the gas industry. But there is another and an important side to the Gas Exhibit, and that is the advertisement propaganda associated with it. This is costing much money; but it is money well and wisely spent. We quite agree fully and absolutely with the Executive Chairman of the "B.C.G.A.," in an article in the "Bulletin," that, Wembley being so vast, unless the attention of the public is unmistakeably and constantly called to an individual exhibit, however well situated, and however attractive and important in appearance, the money spent on space, design, construction, equipment, and maintenance, will be more than half wasted. The "Advertisers' Weekly," in an article headed "Six Jewels at Wembley," singles out the Gas Exhibit as an example of enterprise in advertising; and—looking at the matter from its own point of view—our contemporary attributes this to the excellence of the advertising of the "B.C.G.A.," which "has long been the subject of admiration"—indeed, "its printed salesmanship is vigorous and compelling." Then there is the cost of the maintenance of the exhibit during the six months' run. Thus it is seen that the money spent on space, design, construction, and equipment is only one part of the expenditure. There is the needful auxiliary outlay, which cannot, and must not, be on a niggardly scale. Perceiving and appreciating requirements in these days, when all the driving force of the competitors is being utilized, the policy adopted by those in charge of the industry's interests at Wembley is a broad one, and the one generally approved. That it is right is proved by the far-reaching effects already realized in drawing visitors and in securing a good proportion of their interest. There is further proof in the large body of favourable testimony, from inside and outside the industry. People who had not given much thought to the matter before are being persuaded by the Exhibit that the gas industry is much alive, and ready for a large expansion of its service.

Society of British Gas Industries.

Moving, thriving, and largely helpful to the gas industry is the Society of British Gas Industries. The report of the Council which was submitted by the Chairman (Mr. F. C. Tilley) at the meeting last Thursday is evidence of this, and evidence of a quality and an extent which has never been surpassed in the history of the organization. The Society is an influence in our industrial advancement; and each year sees a strengthening of the bonds which unite it with the gas-supply part of the industry. The unity is manifested and attested in several important ways; and the seal is set to it all when we see Mr. D. Milne Watson, the President of the National Gas Council, succeeding Lord Weir as President of the Society. His Lordship has endeared himself to the members; and his great gifts of perception and expression on both national and engineering affairs, combined with his natural amiability and wit, have combined to make his year of office one which will ever be remembered. His address at the meeting last week, and his speech at the dinner, are typical of those characteristics. The address particularly will appeal forcefully to every reader who is concerned in industrial matters. We were speaking of the part the Society takes in co-operative work in the industry. It extends over technical and commercial questions; and in all these the constituent firms of the Society are ever ready to sink individuality and to co-operate when the efforts are directed to the gaining of general progress. Especially instancing this in recent times has been the part they have taken in the co-operative Gas Exhibit at Wembley. The Society made themselves responsible for the supply of the necessary plant and appliances; and their joint monetary contribution ran to £11,000. We cannot help emphasizing this. It is a recognition by them that gas sales are fundamental to the stability and progress of the industry, in which the manufacturers of plant and appliances are as much concerned as the suppliers of gas themselves. We are pleased to see that Mr. J. Wilfrid Drake is to have the honour of succeeding Mr. Tilley as Chairman of the Council, and Mr. B. B. Waller is to be the Vice-Chairman. Connected with last Thursday's meeting there are one or two other matters to which we shall take an early opportunity of making reference.

A Joint Committee on Flueless Gas-Stoves.

A Joint Committee of the Society of Medical Officers of Health and the Royal Sanitary Institute have been considering the question of the use of gas-stoves for domestic and workshop heating where no provision is made for the escape of flue gases to the outer air. The Committee (as will be seen in our news columns) consisted of professors, medical men, and architects; but we are afraid it cannot be said that their inquiry has done much to advance previously possessed knowledge regarding the subject. As a matter of fact, the whole result is of rather a negative character, and shows that the flueless gas-stove is not, from the experiences advanced, nearly so black as it has been painted by a few who have a crotchet in this direction. We have long been entirely opposed to the installation of flueless gas-stoves in rooms that have small cubical capacity, and are not properly ventilated; but in places of large capacity, and with good ventilating conditions, there is no evidence that such stoves have any unwholesome effect. It is all a question of use in suitable circumstances. This has been recognized for many years; and the report issued by the Joint Committee has not in any wise altered knowledge or the position, nor will it change the course of current practice of all well-managed gas undertakings. A Committee of this kind is usually appointed because there has been some fairly positive reason for making research. But such a reason appears to have been wholly absent on this occasion; and the conclusions point to the unproductiveness of the inquiry. They simply support and confirm what we have just referred to as current practice; and to that extent, and that only, the report has value. So convinced are the Committee of the absolute necessity of very free ventilation existing where flueless gas-stoves are in use, that they state in their conclusions that it is desirable to discourage the introduction of these stoves, and to express the opinion that their use can only be justified in such places as entrance halls, passages, landings, &c., where ventilation is free, and where occupants do not remain for any considerable length of time. This clearly shows that nothing new has arisen to suggest the revival of this somewhat ancient question—in other words, the passing of time, with its increased use of such stoves in suitable situations, has not added fresh evidence to that formerly existing as to any baneful effects arising from these highly efficient large-space heaters.

A noticeable point is that, while these two bodies thought fit to indulge in an investigation which produced so little result, more highly scientific bodies have seen no reason for troubling themselves about it. Indeed, we are afraid the super-scientific authorities are getting somewhat sick of the succession of mare's nests which are introduced to their notice in one form or another by those who meddle in things they little understand. In this case, the Joint Committee approached the Medical Research Council regarding an experimental investigation into the effect upon health of the use of flueless gas-stoves. But Sir Walter Fletcher, in reply, expressed the opinion that no case had been made out for new research on these lines. "Flueless stoves," wrote Sir Walter, "should be prohibited in the absence of thoroughly satisfactory ventilation; given proper ventilation, it does not seem worth while to hunt for any possible additional and unknown chemical dangers to health beyond those which are a matter of common knowledge." Then the Committee submitted a questionnaire to the Medical Officers of Health in large cities; but the most prejudiced person will gather very little evidence from their replies as to any ill-effects. An important communication was from Dr. Howarth, of the City of London. He refers to nine workshops in which flueless gas-stoves are used, in which "the conditions appear to be good, the health of the occupants unaffected, and the output of work normal." He adds: "In general, there is no objection on the part of the workers "to the use of these stoves; and probably the large size of "the rooms, the constant change of air and adequate ventila- "tion, are sufficient to diminish any ill-effects that might "arise in less favourable circumstances." In one case mentioned by Dr. Howarth, complaint was made, and here there was a flue 2½ in. in diameter; the windows, however, were never opened. We are not surprised at the complaint, despite the presence of the flue. The carbonic acid exhalations of the workers, combined with the reduced humidity of the atmosphere which arises with heating by convection where flues are provided for carrying-off the products of combustion, and no other means of ventilation are provided, are conditions sufficient to cause complaint. Yet such conditions are avoidable by the persons concerned. However, from the information received from various quarters, the Committee admit there is little or no evidence of injurious effects upon health, where rooms are of fair size, sufficiently ventilated, and not overcrowded; but still they think the presence of SO_2 in the air, the raised temperature, combined with stagnation of the atmosphere, the over-dryness of the air, and the stuffy smell due to the carbonization of organic matter in the air, are all conditions which "may" arise where bad ventilation and lack of supervision exist. "The constant breathing of such an atmosphere must in "time affect the health of the occupiers; and in the case of "workshops is likely to lower the output and depreciate "the quality of the work." That is all supposition. We should not care to work in such an atmosphere, and should take good care not to do so. But the Committee produce no evidence to show that such conditions actually exist in practice; and their report contains no trace of evidence that it does. Yet flueless gas-stoves have been used for large space heating for a great number of years.

The Joint Committee have made their inquiry; have not increased knowledge regarding the matter; and now they may well allow it to rest in peace. Gas undertakings are fully alive to the importance of not installing flueless stoves where they would create conditions which would act prejudicially upon their business.

Coke-Retailing Artifices.

Coke has of late been gaining a large amount of notoriety in the newspapers, through the malpractices of certain retail dealers in their transactions with the public, or through the plundering propensity of the carmen they employ. The London County Council are taking-up the matter; and it is to the interest of the gas industry strongly to support any action they may take which will ensure honest dealing in this important secondary product of coal-gas manufacture. Many provincial local authorities have clauses in their General Acts which enable them to protect buyers of coke

in small quantities; and such protection, it is important, should be general in the interests of our industry. There need be no argument over the matter. Short weight or measure cannot increase the popularity of coke as a fuel. Coke has either to be sold honestly by retailers, or the producers, with from 8 to 10 million tons a year available for sale, will eventually suffer. A report on the subject by the Public Control Committee of the London County Council, which we noticed in the "JOURNAL" for May 21 (p. 544), gives several examples of delinquencies in regard to this question of coke retailing. No blame is imputed to the London Gas Companies. The Committee recognize this by stating that the Companies sell on a fair basis by weight in separate sacks, while completed loads are checked on a weighbridge before leaving the works. Over what retailers do with the coke after it quits the works, the Gas Companies have no control; nevertheless, it is their concern that the public should not be cheated.

There are several startling instances given in the report as to the tampering that goes on; and these are described as "typical." In one case an order for 10 cwt. was found to be 2 cwt. 50 lbs. short. In another case, a quantity invoiced as 5½ tons was found deficient by no less than 15 cwt. 16 lbs. A third instance was the representation on a delivery ticket of 3½ tons, which was found to be 2 cwt. 92 lbs. short. A similar delivery to the same institution was 5 cwt. 38 lbs. short. Gas undertakings usually regard a chaldron of coke as equivalent to twelve 1 cwt. sacks; but an example is given of the weighing of a ½ chaldron order which was being executed by a retailer, and found to consist of 188 lbs. only, instead of approximately 336 lbs. The charge was 7s. 6d., which works out on the actual delivery to 4s. 6d. per cwt.; and this was a delivery to a poor person! In another delivery of nine 1 cwt. sacks, a shortage of 128 lbs. was found. A purchase of 1 ton 4 cwt. was discovered to be 3 cwt. 99 lbs. short of the represented weight. During the year ending March 31 last, seven carmen and three receivers of stolen coke were prosecuted, on the evidence of the Council's coal officers; but a difficulty is that when carmen are discovered committing these thefts, the employers are not always willing to prosecute. The discoveries are, of course, only part of the offences that go on day by day. Where dealers are themselves responsible for stiff prices for short weights, they usually sell to the public by the "chaldron" or "by the sack;" and the report makes the illuminating revelation that an investigation in one district disclosed that the average capacity of the coke dealers' sacks varied from 84 to 90 lbs., instead of 112 lbs.

To safeguard the public from being robbed in respect of coke in the way described, no effective legal measures can be taken under any existing general law; and therefore the Committee are strongly in favour of legislation being initiated by the Government to provide that all coke should be sold by weight. We see no objection to this, in view of the protection it would be to the public. The recommendation of the Committee is to that effect, with a suggestion that the President of the Board of Trade should have his attention directed to the matter. We rather think the President would be very sympathetic, in view of the fact that the poor are fairly considerable buyers of coke in London, though individually in small quantities. It is largely from the poor that dishonest coke dealers profiteer by cheating. One objection to selling by weight has been discovered; it is that it might lead to the coke being watered. Of course, coke is an absorbent material; but we agree with the Committee that the risk of deliberate watering, and thus the sale of water instead of carbon, has been probably somewhat exaggerated. It is quite likely that retailers who are out to cheat (reputable merchants are not included in this) would not hesitate to compensate by water for deficiencies in weight, if they thought they could escape detection. However, the point induced one member of the Council to suggest that a "standard of dryness" should be prescribed. But apparently he did not understand the difficulties of making a test, at the time of a delivery at the purchaser's house, to ascertain whether the prescription as to dryness or maximum content of moisture had been observed. The suggestion has been rejected. But to their recommendation as to legislation for providing for sale by weight, the Committee have accepted an addition to the effect that it should be made an offence to water coke with a view fraudulently to increase its weight.

It will be interesting to see whether any development takes place in this respect. The Government have their eyes upon excessive profits through high charges for coal by retail merchants; and they will not be doing amiss if they provide protection for the public in relation to dealings in coke after it leaves the producers' works.

Sunny Days at Wembley.

It is wonderful what a big effect a sunny day has on the number of visitors at Wembley. The registrations of the turnstiles make a big flight. It is hoped that there will be a long succession of sunny days the next four months. The world is large, and the supply of people big. Many will go to Wembley from all quarters for the interest that the gigantic exhibition contains, and in order to learn what our Empire can do. There will be a multitude of people, too, who will be drawn there because they have a natural propensity for sight-seeing. Whatever the object of the visitors, they all require light and heat, and many of them power; and therefore the Gas Exhibit presents interest to them all. The exhibition drew 169,202 visitors last Saturday.

Projected Visit of the Juniors.

There was a movement on foot some time since for a combined visit to Wembley of the Junior Gas Associations last Saturday. We understand that the project had to be abandoned. Contributory to this decision were lack of support and inability to obtain at the exhibition accommodation for a joint meeting. Therefore the abandonment was confirmed by the Council of all the Junior Associations affected.

Statutory Gas Companies' Electricity Powers.

Presented by Mr. Reginald Clarry, a Bill has been introduced into the House of Commons to facilitate the supply of electricity by statutory gas companies. It is a short measure. It provides that statutory gas companies may apply for Special Orders under the Electricity (Supply) Acts, 1882 to 1922, and that the companies may use their funds in the promotion of such applications, and for carrying into effect the powers granted by the Electricity Orders. It also provides that the Electricity Commissioners may (subject to such conditions as they see fit to impose) grant to any statutory gas company to whom an Electricity Order has been granted, or who are authorized by Act of Parliament to supply electricity, Special Orders empowering such company to raise capital or borrow money for the purpose of their electricity undertakings to such an amount as shall have been previously approved in each case by the Board of Trade. The Bill is supported by Sir William Cowan, Mr. Clayton, and others; and it is the measure which was referred to by Dr. Carpenter at the last meeting of the Gas Companies' Protection Association.

Gas Capacity of a New Airship.

One of the requirements for a new rigid commercial airship, for which the Government proposes to enter into a contract, is that the gas capacity shall be not less than 5 million c.ft. The agreed price is £300,000.

Ironmongers and Unventilated Gas Apparatus.

There is need for a little educational work among our friends the ironmongers. They are raising objections to gas concerns taking special precautions among the public in regard to the use of gas-heating apparatus without flue-vents. At the recent annual conference of the Ironmongers' Federation at Bristol, the question was discussed. What the members appear afraid of is that, through this action on the part of gas suppliers, they will be left with an amount of stock of which they will not be able to dispose; and they assert that down to the war the gas apparatus which they sold gave very little trouble. The ironmongers must not forget that they are a comparatively small section of the community, and not the community itself; and it is the interests of the latter that gas undertakings have to study. Much has happened since the war; and one thing is a large growth in the use of gas-heating appliances—a growth which is proceeding very rapidly. The public have to be protected; and it is within the knowledge of gas undertakings that much of the apparatus which has been the cause of trouble—particularly geysers without flues—enters the homes of the people through ironmongers. Nearly all the accidents that have arisen have been due to the unventilated class of apparatus. Now the ironmongers blame the present-day

gas, and not the appliances. Up to the time of the war, said one member at the Federation meeting, gas apparatus rarely gave trouble so far as the public were concerned. One reason for this was that gas-heating apparatus had not become the vogue to the extent that it has since. The ironmongers, however, deduce from this fact that it is the gas that is to blame, and not the apparatus; and there was random talk about the composition of the gas having changed. Practically everywhere in the country town gas is of the same composition to-day as before the war; and in view of the fact that coke is commanding such a large and ready sale, and enriching oil is dearer, there is probably less water gas being made to-day than prior to the war. As a matter of fact, the cost of water gas is at present more than the net cost of coal gas into the holder. Another thing, it is not the chemical composition of the gas before combustion that is in question; it is the volume of the products of combustion thrown into a room that is important. In large and well-ventilated halls or workplaces, the volume of the products is negligible; but geysers without flues in small bathrooms and gas-heating apparatus in other rooms of restricted cubical capacity—well, we are out for prohibition every time. Even ironmongers may make mistakes through the absence of adequate knowledge. We are very confident that they do not want knowingly to sell dangerous and inefficient apparatus; but they confess they are doing so. A stop must be put to this somewhere; and the sooner the better. Now is the time.

The Miners' Settlement.

The national delegate conference of the Miners' Federation last week accepted the new wages agreement. On a card vote, the result was 473,000 for and 311,000 against. The Committee of the Federation were also authorized to sign the agreement for twelve months, subject thereafter to a month's notice by either party. The heavy vote against acceptance was largely due to South Wales and Scotland. The agreement is retrospective from May 1, so that the higher wages are due from that date. One authority estimates that, with a full volume of trade, the increase in the total wages bill of the collieries will amount to nearly £200,000 a week. The settlement is an eminently satisfactory one from the point of view of the men. In all districts, the minimum wage is increased from 22 to 33⅓ p.ct. above the 1914 wages. The ratio of profits to wages is also reduced. For each £100 paid in wages, the owners will receive £15 in profits instead of £17, as previously; and the surplus income will be divisible in the proportion of £88 in wages to £12 in profits, instead of £83 in wages and £17 in profits. A substantial concession to the low-paid men who are on the subsistence wage, amounting to as much as one-eighth of their daily wage, has also been made.

Retail Coal Prices.

Last week notice was made of the reduction by one London firm of the price of household coal by 3s. to 5s. per ton. Succeeding this, it was announced that in Central London coal prices would be reduced by 2s. per ton. The Coal Merchants' Federation has under consideration a new schedule of prices; and it is expected that further reductions will be effected in the near future. The retailers' profits ought now to be a minus quantity, having in view the recent statement to the Secretary of Mines as to 9d. (or thereabouts) profit per ton.

Working in the Coal Industry.

Surveying the position of the coal mining industry in the first quarter of this year, the "Board of Trade Journal" states that while production was maintained at the high level reached in 1923, the quantity of coal exported was substantially reduced owing to the fall in the demand from the Continent, due in large measure to the general resumption of work in the mines in the Ruhr coalfield. There was consequently a large increase in the amount available for home consumption. In view of this, prices were well maintained—the fear of a coal strike producing a large demand from industry, and this was accompanied by a continuation of cold weather. The tonnage of coal raised and weighed at the pits during the thirteen weeks ending March 29 last was 72,215,000 tons; during the quarter ending Dec. 29, 1923, 71,616,000 tons; during the quarter ending March 31, 1923, 71,043,000 tons. Excluding clerks and salaried persons, the wage earners at March last numbered 1,185,000, compared with 1,138,300 at March, 1923. In the quarter, 49⅛ million tons of coal were available for consumption in Great Britain, making allowance for the coal equivalent of coke and manufactured fuel exported. This was nearly 5 million tons more than in the previous quarter, and 4¾ million tons more than in the corresponding quarter of 1923. As compared with the first quarter of 1913, the quantity of coal available was 1½ million tons more in 1924, or approximately the same when allowance is made for the fact that the Easter holidays fell in the first quarter in 1913, but not in 1924.

Industrial Councils.

The House of Commons, by 236 votes to 16, has given second reading to the Industrial Councils Bill introduced by Mr. Murrell. Its purpose is to facilitate concord between employers and workers; and the method by which this is to be achieved is by giving the Minister of Labour power to set-up Industrial Councils. The few who objected to the Bill on principle were the irreconcilable Socialists. The trade union leaders, however, were for the most part solidly in favour of the measure, seeing in it a means to secure peace in industry and the avoidance of strikes. The Government were not so enthusiastic. Miss Bondfield criticized several of the provisions from the departmental point of view, particularly that involving penalties for breach of an agreement. The Labour Ministry, she said, hold strongly that opinion among the existing Whitley Councils is not ripe for the extension of compulsory powers. Many other members were of the same view; and it was generally agreed that amendments will have to be made in Committee. On the general principle, however, opinion in the House was decidedly in favour of the measure.

Sulphate of Ammonia Exports.

In April, 12,148 tons of sulphate of ammonia were exported, as compared with 13,681 tons in April, 1923. Though there was this reduction during the month, in the four months 99,406 tons were shipped, as contrasted with 78,019 tons in the corresponding four months of 1923. Japan and Spain continue to be the largest buyers.

PERSONAL.

Mr. H. M. THORNTON, J.P., A.M.Inst.C.E., has been elected a Member of the Livery of the Worshipful Company of Founders.

The official list of his Majesty's Birthday Honours includes, among the new Knights, Mr. GERALD BELLHOUSE, C.B.E., Chief Inspector of Factories.

Mr. WILLIAM CASH, F.C.A., has been appointed a Director of the Barnet District Gas and Water Company, and also Chairman of Directors, to fill the vacancy caused by the death of Mr. A. F. Phillips.

Mr. F. G. AMBLER has been appointed Works Superintendent of the Morriston Works of the Swansea Gas Light Company. He was formerly Deputy Gas Engineer of the Nelson (Lancs.) Corporation.

Mr. W. J. COLLINS GARRARD, an assistant to Mr. Frank Prentice at the Ipswich Gas-Works, was successful in passing Section A of the examination for associate membership of the Institution of Civil Engineers, held recently. Mr. Garrard is the youngest son of Mr. James S. Garrard, Secretary to the Eastbourne Gas Company.

Mr. E. Shinwell, M.P., Secretary for Mines, has appointed Mr. HENRY WALKER, C.B.E., Deputy Chief Inspector of Mines, to be Chief Inspector of Mines, in succession to Sir Thomas Mottram, C.B.E., who will retire on June 20, on reaching the age of 65, and Mr. FREDERICK HORTON WYNNE, Divisional Inspector of Mines, York and North Midland Division, to be Deputy Chief Inspector in succession to Mr. Walker.

Mr. STUART PEXTON, Ph.D. (Leeds), who has held for the last two years the Gas Research Fellowship established by the Institution of Gas Engineers at the University of Leeds, has resigned the Fellowship on his appointment to the research staff of the Gas Light and Coke Company. Dr. Pexton received the whole of his university training at Leeds; and the research work carried out during his tenure of the Fellowship has been directed towards the elucidation of phenomena occurring during the volatilization of carbon in steam. Results were submitted to the Institution of Gas Engineers in a joint paper by Dr. Pexton and Prof. Cobb last June, and a further publication will be made at the forthcoming annual meeting. The vacancy in the Gas Research Fellowship will be filled as soon as possible.

Gaseous Combustion at High Pressures.—The reproduction of the paper on this subject, by William A. Bone, D.Sc., Ph.D., F.R.S., D. M. Newitt, B.Sc., D.I.C., and D. T. A. Townend, B.Sc., D.I.C. (Salters' Research Fellow), the first part of which appeared last week, will be continued in the next issue of the "JOURNAL."

ELECTRICITY SUPPLY MEMORANDA.

The Influence of Experience.

In their co-operative displays at the British Empire Exhibition, the gas and electricity industries have endeavoured to demonstrate, by typical representation, the many applications of their respective commodities, though not comparatively—the onlookers being left to judge for themselves the relative efficiency and economy of any one process as accomplished by the two agents. Perhaps this is right. We of the gas industry fully realize that in every direction in which gas is so popular, electricity is bound to get a footing, and this is a good thing. Experience is an excellent advertising medium. It is the means of proving to users that in all domestic and industrial processes in which heat is required (save in very exceptional circumstances) gas is the superior of its competitor. In room heating, for example, the electric fire has obtained some amount of adoption; but far behind that of the gas-fire. The reason for this is not far to seek. When people want a labour-saving and smoke and dust preventing method of heating, if there are only two competitors on the market, the majority of them will patronize the one that gives the cheaper service. Owing to this, electric heating has only been favoured with entrance into the homes of the rich, and into rooms and offices where there is short time use. Patronage has therefore found fairly well-defined limits—due largely to experience. Many electric fires and radiators have been displaced by gas-heaters; and it is worthy of note that, despite the price of gas being higher than pre-war, there have never been any years like the last two for the number of gas-fires installed. Nevertheless, these have been the years of increased exertions on the part of the electricity industry to secure a larger heating load. Experience tells; and gas undertakings, with politic administrators, can make gas tell a very good tale. The same thing is happening with electric cooking and water heating; indeed, many people regard the application of electricity to the latter purpose as an excellent joke, particularly for household bulk supply.

Should the Attendant Tell?

Certain electrical people have found a new cause for grievance. There are those who think a co-operative display typifying applications should be a sort of shop where orders can be taken and transactions completed, with only delivery of the goods to be made from another quarter. "Electrical Industries" has made quite a point of the fact that, at the display organized by the Electrical Development Association, visitors "find to their astonishment that it is not easy to discover by inquiry the source from which a particular exhibit can be obtained; and moreover that it is quite impossible to place an order, however deeply they might have fallen in love with some object at the electrical heart of the exhibition." It thinks that it should not be beyond the brain power of the organizations which have worked hard to secure the success of the display, to devise some scheme of unimpeachable impartiality which should at least prevent business from being damped down at the very place which has been created for its encouragement. Our contemporary therefore hopes that something will be done to enable visitors to give a definite order before they are baffled by evasive replies, and have wandered elsewhere to have their attention engaged, and to spend their money. The writer of "Trade Talk" in the same issue of our contemporary is more pointed in his criticism. He asks the question: "Why have the attendants on the 'E.D.A.' stand instructions to refuse to give inquirers the name of the manufacturer of any particular article?" He fancies there may be some subtle reason underlying this rule; but what it can be, he fails to fathom. Anyway, it is his view that it cannot be in the best interests of the industry to adopt such an attitude; and he sincerely hopes it will be remedied. There was trace of a little apology in the succeeding number of our contemporary. Perhaps the "E.D.A." authorities did not appreciate such direct criticism of this point in their policy. Our contemporary has no doubt as to the propaganda value of the exhibit; and it excuses the criticism it had circulated by saying that the sole idea was that the service to the industry should be made more efficient. Then it applies balm to the wound by remarking that the "E.D.A." section has become greatly improved—according to one observer, its attractiveness is 50 p.ct. better; but doubtless ingenuity will continue to find new methods of appealing to the public. The suggestion here is that the original scheme and its materialization were not what they should have been by that 50 p.ct. scope for betterment, and still there is room for the application of ingenuity.

Electricity in Service.

Somehow or other there are people who have not yet grasped the objects and functions of co-operative displays—such as those of gas and electricity at Wembley. Mr. J. W. Beauchamp, the Director and Secretary of the Electrical Development Association, has been endeavouring to put right the narrow-minded and short-sighted in the electricity industry. We rather think that the old-fashioned method of display in bulk, instead of types, still appeals to a section of those engaged in both the gas and electricity industries; but, thank goodness, they are a diminishing quantity. Mr. J. W. Beauchamp points out that the "E.D.A." display at the British Empire Exhibition has an importance to the industry beyond its immediate business-producing objective. It stands for a sound policy in public utility advertising, to a great extent new to the industry—in fact, our friend says, this is the first co-operative effort carried out for suppliers of electricity. We were under the impression that the "E.D.A." itself was the result of a considerable co-operative effort by the suppliers of electricity. Its work, too, is of a similar order. Another point is that the "E.D.A." "has now been working for some five years, literally living in a land of opportunities, too few of which it has been in a position to grasp." It is not clear why this should be. Has it been a question of insufficiency of propaganda money, the cost of appliances and of installation, or the cost of electrical energy? We are all living in a land of opportunities, and the gas industry appears well satisfied with its continued progress, despite the exertions of the "E.D.A." Perhaps the activities of the "B.C.G.A." and the superior economic position of gas in the household, have had something to do with the failure of our rivals to "grasp" the opportunities which are so luxuriantly present in the land in which we are living. However, the co-operative enterprise which the "E.D.A." have organized at Wembley is one of which Mr. Beauchamp thinks the industry need not be ashamed. Only last week we were pointing to criticism in the electrical papers as to something more being wanted at the display to realize more public attractiveness; and now we learn (as mentioned in the previous paragraph) that it has received a 50 p.ct. betterment. But Mr. Beauchamp naturally thinks that the exhibit is going to prove a real public service, returning its cost a thousandfold. He is very optimistic; but he would not be worth his salt were he not. Of course, one can have displays not only of the most efficient and economical methods of doing things, but of the most extravagant; and there may be people who are so endowed with optimism that they may believe even the cost of the display of the latter will repay itself a thousandfold. But who is to judge whether or not Mr. Beauchamp is right? By all accounts, an exhibition was not actually needed, having in view the superlative merits (fashioned in the minds of some electrical people) of electricity for domestic and other purposes. In the Electrical Exhibit, it is also pointed out, there is nothing to sell, but everyone desires to serve. This is as things should be; and we know that in another place in the exhibition the same desire to serve is an animating feature.

A Despicable Little Leaflet.

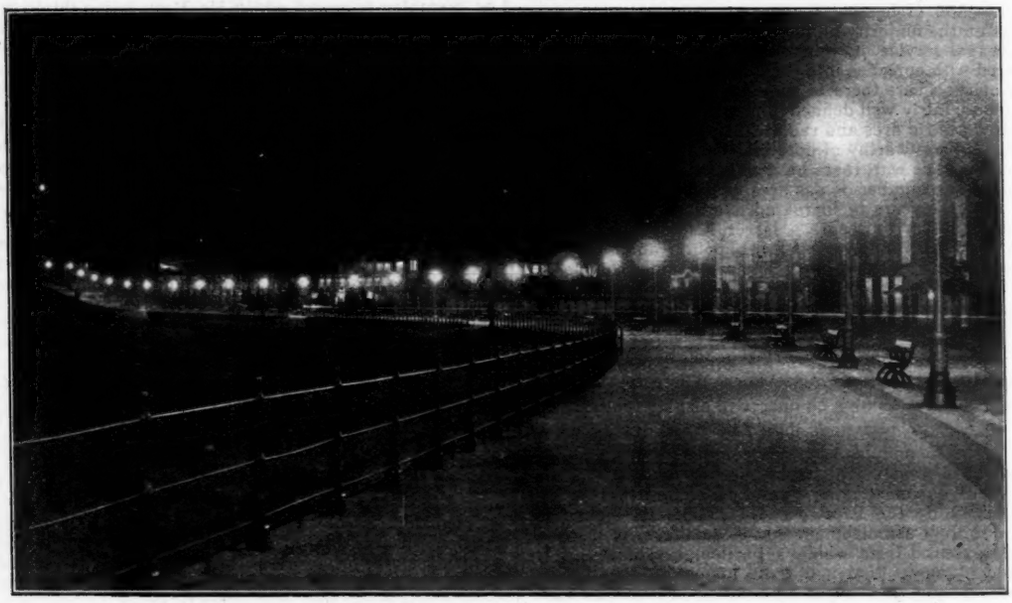
We do not know, probably the "E.D.A." could tell us, who is responsible for a leaflet that has been issued, entitled "History Repeating Itself." It is an unsportsmanlike piece of propaganda; it is entirely a negative production; it contains no claims as to what electric cookers can do; and, moreover, it presents something that is untrue. But it is just one of those nasty waspish little leaflets that are designed to insinuate something, and to try to make lay folk believe there is truth underlying it. It starts by saying: "If electric cookery is not a sound and an economic proposition, simpler in use, and better in result than any other method, the gas suppliers have nothing to worry about." It just happens that gas suppliers are not worrying much about it. But we should like to ask the question why, if the electric cooker is all that is represented, was there the occasion to issue this leaflet? Naturally gas suppliers do not care to see their customers deceived, as deceived some of them have been, as witness the demand for gas boiling-rings where electric cookers have been installed under (say) a year's hiring contract. The users soon learn that all the work effected on the hotplate of a gas-cooker is not readily and economically done on the hotplate of an electric cooker; hence the quick reversion to gas for about 80 p.ct. of the cooking operations. But the author of this stupid illogical leaflet says that "apparently, they [the gas suppliers] consider it necessary to spend money on issuing pamphlets which attempt to persuade householders that electric cookery is something to be avoided. Are they no longer sure of their own position in this field of domestic work?" It is very clear that the people responsible for the leaflet before us are not sure of their position; otherwise they would not have issued this piece of evidence of their pusillanimity. It goes on to say that "the gas suppliers tried in a similar way to frighten the public from the use of electric light; yet electricity has for years been replacing gas as rapidly as we could connect and provide for the consumers." Strange is it not that, despite the economy of incandescent gas-lighting, the evening and night load of gas undertakings is much greater than it was ten, twenty, or thirty years ago, or before the Electric Lighting Act of 1882 was passed? How is that? The writer seems to think that the gas industry develops its business by the exercise of the art of frightening the public. We think they might have a little better opinion of people who have built up an industry such as that of gas supply, with all its valuable products. Who, by the way, was it who used to talk of "poisonous fumes" and so forth, until they brought upon themselves an immense amount of ridicule? The men of the electricity industry are past-masters in the art of trying to frighten the public. Fortunately the public are not easily frightened, and are not all such fools as the writer of the leaflet manifestly thinks. "The gas suppliers," we also read, "tried to frighten factory owners from using electric power; to-day the manufacturer insists on electric power in his workshops." The gas-engine makers are as busy as ever. Then an absolute falsehood follows: "The motor *alone* made it possible to adapt every kind of works to the production of guns and

munitions." The electric motor "alone" did nothing of the kind. Gas-furnaces had a very large part in the production of guns and munitions; and the ability of gas manufacturers to supply the needs of the Army in respect of explosives and many other things, saved not only England and her Allies, but the British electricity industry. We have never seen an electrical leaflet that contains a greater concentration of piffle than this one. If the electricity industry feels that it must have recourse to a production of this kind, then it is in a very bad way.

Situation of Lamp-Posts.

A case was tried last week in the Law Courts in which Mrs. Agnes Burgess and her daughter sued the St. Marylebone Borough Council and Mr. Reginald Queckett, the owner of an omnibus, for damages for personal injuries due to the alleged negligence of both the accused parties. It seems that on April 4 last year, a bus belonging to Mr. Queckett knocked over a lamp-post, which fell on the two ladies. It was suggested that the camber of the road was not right, which caused the top of the bus to overhang the kerb; and therefore the lamps should have been set farther back. But the Lord Chief Justice thought it would be intolerable to have the lamp standards in the middle of the footpath; and he thought the Council had to use discretion in the matter. The Borough Council were therefore dismissed from the suit; but Mr. Queckett had damages assessed against him to the amount of £800 in the case of Mrs. Burgess, and £125 for Miss Burgess, with costs. The case as it stands means that unsuitability one to the other of camber of road and location of lamp standards has nothing to do with a case of this sort; but that the inexperience of the driver of a vehicle which causes him to drive so as to knock over a lamp standard is the important point.

A MAGNIFICENT EXAMPLE OF GAS LIGHTING.



SOUTH FORESHORE, SCARBOROUGH—LIGHTED BY SUGG'S 12-LIGHT "LITTLETON" LAMPS.

ANOTHER VIEW OF THE FORESHORE.

We are indebted to Mr. A. Philip Allan, the Engineer and Manager of the Scarborough Gas Company, for two excellent photographs illustrating the lighting of the South Foreshore, Scarborough. Scarborough well deserves its title the "Queen of Watering Places;" and in such a place a good exposition of the efficiency and charm of gas for outside lighting will not only enhance the popularity of this delightful seaside resort, but will have an influence on the thousands who visit it, which will redound to the credit of the gas industry.

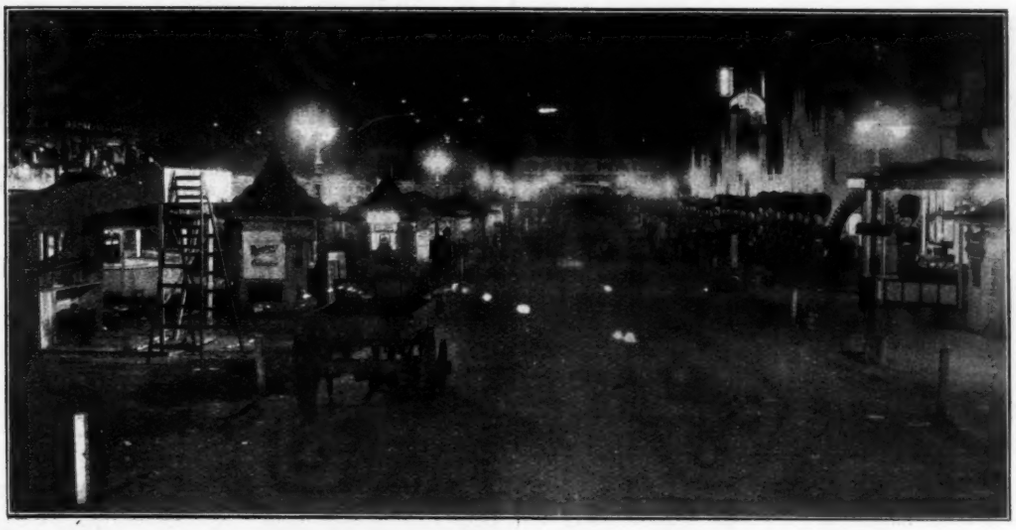
The foreshore, all the main streets, and the famous spa are lighted by Sugg's "Littleton" lamps, employing superheated clusters of four, six, or twelve small mantles, according to position; while the side streets are supplied with Sugg's "Windsor" lamps carrying twin-bijou clusters. In all there are 1151 two-light lamps, 253 four-light lamps, 214 six-light lamps, and 84 twelve-light lamps. There is no doubt that Scarborough sets a very fine example of really good lighting by gas, and should be a strong inducement to other seaside resorts to do something equally good.

The "Electrogas Floor Furnace."

A gas-heating device bearing this name, which is manufactured in San Francisco, has been shortly described in the "Gas-Age Record." From the account there given, it appears that the radiating unit consists of ribbon-like hollow fins, sealed at the top, and ranged radially around a sleeve in which the flame burns. The hot burnt gases travel up through this sleeve, and are then deflected down through each of the hollow fins to the open base, where they are drawn-off through a concealed vent pipe under the joists. The cold room-air flows to the base of the fins, and then rushes up between them, taking the heat away and delivering it into the room without any fumes or moisture. The flame is ignited by a standard spark plug and coil, connected to either a small transformer or dry battery. The pilot light is thus eliminated. By means of a switch on the gas-control rod, the gas is ignited when turned on from the floor level. The bottom of the unit is open to the basement, from which air for combustion is drawn. The furnace may, it is said, be deliberately filled with gas and then exploded without any risk of damage.

THE LIGHTING OF THE AMUSEMENTS PARK AT WEMBLEY.

Better weather conditions have enabled photographs to be taken of the actual lighting of the Amusements Park, at the British Empire Exhibition, by the "Wembley" lamps, to which reference has been frequently made in our columns. Many favourable comments have been heard on this piece of outdoor lighting, which is the work of Messrs. H. Staniforth & Co., Ltd., of Cricklewood Broadway, London, N.W. 2. The photographs have not been "touched up" in any way, and naturally in reproduction and printing they have suffered to some small extent by loss in respect of brightness.



New **Woodall-Duckham Vertical Retort Installations.**—Orders have been placed with the Woodall-Duckham Vertical Retort Company for the following vertical retort installations: By the Scunthorpe and Frodingham Urban District Council, for an installation of 3-ton retorts, with a carbonizing capacity of 36 tons of coal per 24 hours; by the Stockport Corporation, for a second installation of 7-ton retorts, with a carbonizing capacity of 180 tons of coal per 24 hours.

"THE SEVEN AGES OF WOMAN."

An Attractive Booklet.

It has been said that the Gas Exhibit Committee scored heavily for the gas industry's demonstration at the British Empire Exhibition when someone conceived the brilliant idea of making a presentment of the uses of gas in "The Seven Ages of Woman." That someone was Mrs. Ethel M. Wood; and we are sure the Committee would like this to be known, so that the honour may be conferred where honour is due. This feature of the exhibit stands out strikingly as the foremost of its many attractive components. Now Mrs. Wood has added to the industry's indebtedness to her by the production of a booklet on "The Seven Ages of Woman," which in style, quality of matter, and appearance is something which will be very acceptable to every visitor to the Exhibit who shows a real interest; and we think that gas undertakings will be desirous of becoming possessed of quantities of the production for follow-up propaganda in their districts. The very appearance of the booklet invites reading; and Mrs. Wood's pen-gift induces and assures it. As we have our thoughts turned back to the early days of life and onwards to the present, Mrs. Wood makes us thankful that we are alive to enjoy the manifold comforts of gas which were denied us in the distant days—though then gas was here, but with use confined to flat-flame lighting; thankful, too, that what was denied to us long ago makes happier the lot at every stage of life of those about us. Mrs. Wood, vividly, skilfully, and with light hand, has given us something here which will press much information home in lay minds as to the service of gas throughout life, and that without distinction as to sex.

Nursing Room.

Nursery illustrating "Infancy" in "The Seven Ages of Woman." The nursery is fitted with the latest patterns of gas fire, cooker, sink, and bath; hot-water supply being obtained from a "Califont" geyser in the next room. Note the artistic lighting by up-to-date gas-burners.

Nursery.

Representing "Childhood" in "The Seven Ages of Woman." The room is fitted with modern gas fire, geyser, gas-ring, and gas-heated glue-pot, and up-to-date lighting.

A Domestic Kitchen Demonstration.

BRITISH EMPIRE EXHIBITION NOTES.

British Sulphate of Ammonia Federation Stand.

No one who visits the Palace of Industry at Wembley can fail to notice the display of the British Sulphate of Ammonia Federation, Ltd. It occupies a very prominent position in the main avenue of the Palace of Industry near the Conference Hall, and next to the Gas Exhibit, and has already attracted a great deal of attention.

Exhibit arranged by the British Sulphate of Ammonia Federation.

In decorating the back of the stand, the Federation have struck a bold note in an attractive, if unconventional, colour scheme. Three large oil paintings, admirably executed by the well-known artist, Mr. Malcolm Milne, depict, in half decorative, half naturalistic style, the essential features of a modern works, and the admirable results obtained by the use of sulphate of ammonia on citrus and other tropical fruits and crops.

The remainder of the exhibit consists of various displays illustrating the methods of using sulphate of ammonia and the profitable results obtained by farmers. The fact that sulphate of ammonia comes from coal has been graphically illustrated, as well as the great difference between the "ordinary" quality and the "dry neutral" sulphate of ammonia. A wide range of samples of this fertilizer is displayed to show the varying colours and size of crystal in sulphate made by the various processes. A sack of sulphate of ammonia forms the centrepiece at the back of the stand, and a large circular basket contains a heap of the neutral salt. Literature on the use of sulphate of ammonia on all the ordinary farm and garden crops, as well as a special publication on its use in agriculture in Europe and the tropics, can be had on request. Visitors to the Exhibition are invited to drop a note of their requirements into a box in the literature table; and the leaflets will be sent gratis and post free.

Crossley Brothers, Ltd.

The Crossley exhibit is situated in the Palace of Engineering, and occupies 1000 sq ft. of floor space. It is especially interesting, as all the various engines are shown working. These consist of four representative types of oil and gas engines, illustrating the firm's leading manufactures, and are examples of the latest modern practice in internal-combustion engineering. A gas-plant is shown, but not as a working exhibit.

The engine in the foreground of the stand is an 80 B.H.P. horizontal crude-oil engine which will also operate on refined oil without any alterations or adjustments being required. The

ADVERTISING THE GAS EXHIBIT AT WEMBLEY.

Local Publicity.

WE heartily congratulate the Tottenham District Light, Heat, and Power Company on the large amount of publicity they have obtained, in their extensive district of supply, for the Gas Exhibit at the British Empire Exhibition.

A copy of the "Enfield Weekly Herald" received from Mr. H. C. Smith, the Chief Engineer of the Company, has a whole page devoted to the Exhibit; and, as a suggestion to other gas undertakings, we have had this page photographed and reproduced. The original page measured 18 in. by 24 in. The same page appears in the "Wood Green Weekly Herald" and the "Tottenham Weekly Herald;" and thus it has had a circulation practically through the whole of the area of supply of the Tottenham Company.

The proprietors of the "Weekly Herald" are apparently very enterprising. They are offering their readers a free day at Wembley, and for this purpose—for a period of thirteen weeks, beginning from last Friday—they are giving away five £1 notes to readers. A representative of the paper calls at houses in the various districts covered by the three papers, and to the producers of a current issue of the "Herald," a £1 note is handed to cover the expenses of a day at the Exhibition. They are giving a pound note in preference to tickets, in order that the winners may select their own route, and the sections to visit.

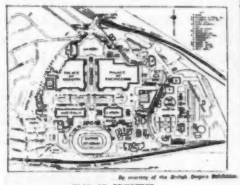
REPRINT FROM THE "BIG THREE" HERALDS, MAY 23rd, 1924.

BRITISH EMPIRE EXHIBITION, WEMBLEY.

"GAS, THE FAIRY GODMOTHER."

FREE DAY AT WEMBLEY FOR "HERALD" READERS.

All roads lead to Wembley, where the British Empire Exhibition, like a magnet, is drawing to it an ever-increasing flow of visitors from all parts of the world. Located in the ever County of Middlesex, the vast super-show, with its marvellous contents, is a gargantuan flourishing to be seen rather than described. And, seen once, there is an irresistible "pull" to re-visit it again and again. To adopt a paraphrase, the visitor is moved to ask himself: "What does ever know of Empire who only England knows?" At Wembley are spread out, for all the world to see types and examples of what the Empire really means, and here not only a relation to Britain, but to all the peoples of the



By courtesy of the British Empire Exhibition

PLAN OF EXHIBITION.

earth. Residents or those suburbs—about half an hour's motor run from the Exhibition—will, of course be found there in throngs. On the page will be found a useful map, indicating the general lay-out. Intending visitors will do well to study it in order to arrange their itinerary of the Site area, with a view to making the most of their time there. The Palaces of Industries and of Engineering, India, Ceylon, Africa, Australasia and Canada, all contribute its specialised features making, in the sum, a microcosm of Empire at our doors, and furnishing an unprecedented illustration of what is comprised by "Britain beyond the Seas." Arrangements have been practically completed for Middlesex school children to inform themselves, by eye and ear, of the resources and potentialities of Empire. And for them, as for their seniors, there are, too, noteworthy delights awaiting realisation in the Amusements Park, not the least alluring of all the attractions to be compiled by "Wembley." You will go to Wembley, and you will go more than once, for its lure is not to be resisted.

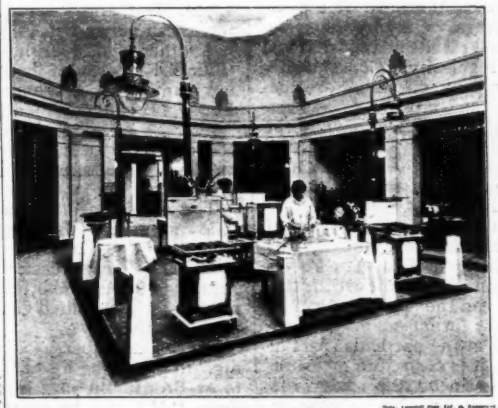
"Whatever you do, do it by gas." The motto, so familiar to the thousands who pass along Tottenham's chief highway, will appeal to all more strongly than ever after a visit to the Empire Exhibition at Wembley. For, with that enterprise which has been a marked characteristic in the commercial operations of the Tottenham District Light, Heat and Power Company, directors and officials have combined to the utmost, as will most admit after an inspection of their comprehensively planned exhibits in the Palace of Industry. Within the limited compass available we cannot pretend to do justice to the exhibitors' value of the display, but if we unfurnish some of the outstanding points of

Photo: Campbell Gray, Ltd., 22, Regent-st.

BEST LOUNGE IN GAS EXHIBIT.

interest our readers will make the pilgrimage to Wembley with a general idea of the informative nature of the object lessons awaiting them in the applications of gas to domestic affairs.

First, however, as to the locality and housing of this particular exhibition. It is on a building covering an area of 12,000 square feet and designed by Mr. N. Anston Hall, F.R.I.B.A. Two pavilions, in parallel, each 120 ft. by 60 ft., have been admirably fitted up by specialists in the art of adaptations—a gas bureau in brief, and cottage to demonstrate a wider knowledge, by demonstration, of the universality of this indispensable agent. Visitors therein must not expect to be guided by obstruction to their objective. Notwithstanding the multitude of supply pipes to the areas of fires, ranges, burners, etc., not the faintest smell of gas is perceptible—in itself testimony to the excellence of the fitters' work. The first pavilion in which, for the purposes of this notice, we are interested, is known—and we venture to predict it will become popular with the public—as the Rest Lounge. Here is one of the very few places where visitors will find, free of charge, comfortable refreshers at their disposal. Parenthetically, it ought be observed that this will be a very convenient place to meet one's friends—"Meet me in the Gas Exhibit Lounge," ought to be probably will be, the message broadcast to all quarters. Ladies in particular, are commended to turn their footsteps thither as soon as they pass the turnstile. Before fatigue overtakes them they should "do" the nights of this pavilion for the reason that they will find so much to interest by demonstrations, in a series of model rooms, of how gas can be of service throughout the "Seven Ages of Woman." In a delightfully written brochure, Ethel M. Wood says all that can usefully be said upon the subject. With extensive style and many human touches she deals with infancy, childhood, school days, college days, womanhood, middle age and old age—and in each is depicted gas service as a "fairy godmother" in every department of life. Ladies should make a point of obtaining copies of this very informative booklet. They will be certain to admire—purchase, desire to possess the enchalled apparatus of the fairy fire fitted in the several model rooms in which ladies promenade the respective "ages," and are always ready to proffer advice and information in relation to the practical side of gas use in their respective spheres. Mistress will appreciate the safety assured in the savory and piquant, and the alarums thereupon and convenience illustrated in its adaptations to culinary operations. Adults will need no more convincing proof of the comfort inducted to gas fires in the bed and sitting-room than that contained in the apartments for middle and old age. How cooking there are in resting places was almost alarmingly proved, a few hours after the turnstiles had finally closed, when a "call round" was found necessary for two ladies in one of the beds! Other apartments in the pavilion include appropriately furnished nurses, bandage and doctor's consulting room. The latter at a reminder—in showing what the faculty thinks of gas fires—that the consumption of gas per area is the continental district of London is highest in the Harley-street and Wimpole-street district. An important detail, to be noted in passing, is that all the burners fitted here are pressure, a push or switch operating the light instantaneously. Prominent features in the lounge are three hexagonal groups of fire-places with 18 gas fires in a variety of artistic settings. These groups are surmounted by pylon lights, fitted with Sugg's distance control dream—an up-to-date invention which is in use at Mr. Bailey's premises in Tottenham. An effective illustration of radiant energy is well afforded by the Davis fire which is fitted with duplex tops and is an excellent model of improved burner construction, while it also demonstrates the fallacy of the ancient prejudice that a gas fire must have chimney water to purify the atmosphere. A fire such as this can be employed at an average cost of 1½d. per hour. Another exhibit which has a local interest is the range with high efficiency nickelled boiler, which is made at the Garton Works, Edmonton.



COOKERY DEMONSTRATIONS IN GAS EXHIBIT.

Photo: Campbell Gray, Ltd., 22, Regent-st.

The furnishing of the several model rooms have been carried out by Messrs. Heal, of Tottenham Court-road, and Messrs. Osborne, of Grafton-street, Bond-street.

While it is in the Rest Lounge where "the third partner" is chiefly demonstrated in relation to the domestic realm, the adjacent pavilion abounds with short lessons wherein gas finds practical application to Industrialism. One section, arranged by Case's, of Cornwall-road, shows workmen busy with aluminium castings. At another anyone with a mechanical turn of mind will find a feast of interest in watching the soy-cast gas (Pentapoint fret-cutting machine operated by Messrs. Hesmark and Co., of Clapton. Capable of being worked all day ordinary house burner, this ingenious contrivance, aided by the gas flame, swiftly cuts through sheets of mild or cast steel, either in straight line or following a curved pattern with equal facility. This method is not only cleaner and cheaper, but performs

Photo: Campbell Gray, Ltd., 22, Regent-st.

GAS LIGHTING IN ORGANDI.

rake in winter and gas in summer, at a fast growing compression popularity, and only for its cheapness, but also because, by the medium of the coke fire, almost any scrap material can be consumed in the process of obtaining hot water. To a general consumers the whole set will be supplied on hire purchase terms, the cost being about £20 complete. There are also shown the most modern methods for fast water heaters. The usual old fast-consuming as they are for themselves how effectually the heat is regulated by automatic thermostats which, incidentally, guarantees economy in use. It should be borne in mind that cost the heat in the exhibition servants of the Exhibition is the contraction in cooking which is afforded by practical demonstrations by experts. In this connection, visitors are advised to inspect the exhibits of bottled fruits, etc. preserved and sterilised by the agency of gas, and contributed by the Smethwick Gas Co. Tottenham visitors will feel Mr. A. Hodgett in charge of the latter company's departments and ready, with his assistants, to afford any required information.

In showing how largely gas figures in the Exhibition generally, we might add that the supply has been augmented through six miles of piping, mostly 20in. diameter. Within the grounds of 250 acres over seven miles of pipes have been laid ranging from 1in. to 12in. diameter. Messrs. Igranic—the largest consumers of gas on the world, do all their cooking by its agency. What this means may be imagined when it is stated that 21,000 persons can be served at the same time and 172,000 meals can be prepared daily. They have a staff of 1,000 and no

PALACE OF INDUSTRY ACROSS GREAT LAKE.

railway purposes over 100,000 c.f. of gas are required per hour.

ROYAL APPROBATION.

Their Majesties the King and Queen, accompanied by their Royal Highnesses the Duke and Duchess of York, paid the first of a series of unannounced and informal ("hacker hat") visits to the British Empire Exhibition on the 2nd inst. Before and after luncheon the Royal party made tours through the Palaces of Engineering and Industry for the purpose of getting a general idea of the principal contents of these enormous buildings, which are as full of interesting and fascinating exhibits that it would take anyone at least a week to entirely cure through sheets of mild or cast steel, either in straight line or following a curved pattern with equal facility. This method is not only cleaner and cheaper, but performs they should inspect the whole series at leisure in proper order, and accordingly they were conducted first to the nursery, where the gas cooker and the bath enclosed in cupboards attracted attention and comment. Next in order, the children in the playroom, one of them riding by her rocking-horse with smiling enjoyment, greatly amused their Majesties. The King chatted in a most friendly manner with them and laughed heartily over their confidential replies to his questions. Passing the school girl to her domestic science classroom, the nurse predecessor in her "bachelor" bed-sitting-room, and the housewife in her all-gas restaurant kitchen—with a kindly word and smile to each happy, curtsying girl, and interested questions to their conductor as to the purpose of the several exhibits. Their Majesties paused to speak to the lady who is, as the King toughingly expressed his opinion to find any women "brave enough" to submit she is middle-aged. With the kindliest of smiles at the "old lady" in the last section of the "Seven Ages," and a glance at the handsome consulting room and managing director's office with their beautiful fireplaces and gas fires, their Majesties completed their tour through an unexpectedly long inspection of the gas exhibit, taking appreciative note of the fact that it provided a welcome resting place for tired sightseers.

EXPERT ADVICE FREE.

The Tottenham District Light, Heat and Power Co. are about to get into personal touch with their customers in order to bring to their notice the latest and most modern appliances. In essence, apart from old saws, they have over 25,000 consumers within their area, the visits of their representatives must, obviously, be spread over a considerable period. Briefly, the scheme is for skilled representatives to inspect apparatus as usual and proffer advice as to getting the fullest possible benefit from the installation. It is certain that after a visit by Wembley there will be a great demand for the latest fires, cookers, lights, etc., and it is here where the benefit of expert advice will be most valuable, with a view to purchase, or how, of the unselfish economical forms of gas service. Should unsolicited attention be desired, an intimation to that effect at the chief office, 632, High-road, will receive prompt attention.

A GREAT EMPIRE SERVICE

AT

A GREAT EMPIRE EXHIBITION.

All industries are public services; but this is true in a special sense of the British Gas Industry—one of the oldest established, yet most actively growing, Public Services of the Empire.

In addition to supplying over 8,000,000 households and business premises with necessities of life—Light, Heat and Power—the Gas Industry, in time of war, proved itself vital to our safety, as the source of essential High Explosives. It is now, in constantly growing measure, helping to solve some of the national and civic problems of daily life; for example:

Coal Conservation, Smoke Abolition, Better Housing, Adequate and Efficient Domestic Service, Increased, Improved and Cheapened Production.

Gas, the purified liberation of Coal—is not only a very economical and efficient Illuminant. It is well on the way to become "The Fuel of the Future." Practical evidence in proof of these statements will be found at Wembley (in the centre of the Palace of Industry) at

THE BRITISH EMPIRE GAS EXHIBIT

which has been organised by the gas undertakings of the Empire.

The Exhibit contains the latest examples of efficient gas appliances for Lighting, Cooking, Water Heating, Room Warming, Laundry Work, and every kind of Industrial Process requiring Heat or Power. It also includes very interesting displays of the many and varied by-products of gas making, showing their value and importance to other staple industries of the Empire, and a fascinating collection of historical exhibits, illustrating the evolution, not only of the gas industry, but also of lighting, cooking and heating from primitive times. A welcome feature of the gas exhibit is a large and airy Rest Lounge (furnished with comfortable armchairs) which provides a convenient meeting and resting place for visitors. This lounge is surrounded by numerous model rooms in which are illustrated the services of gas throughout "The Seven Ages of Woman." Frequent Cookery and other demonstrations will be given by experts, and there will be musical attractions

WHEN AT WEMBLEY BE SURE TO VISIT THE GAS EXHIBIT
(In the centre of the Palace of Industry).

Printed and Published by Crosby and Son, Ltd., Tottenham, Wood Green and Enfield.

engine starts up from cold in a matter of 60 seconds or less—compressed air being used for this purpose. The latter is obtained from a storage receiver which is charged up to 250 lbs. pressure per sq.in. from a belt-driven air compressor also on the stand. The engine with its starting equipment is shown complete and ready for service. On the opposite side of the stand is shown a town-gas engine direct-coupled to a 22½ KW. "Crompton" dynamo. The gas engine has a maximum rating of 38 B.H.P. It is started up by compressed air, and has variable admission governing gear giving an impulse every working stroke. This ensures steady driving at all loads. Ignition is by low-tension magneto. The gas consumption for this engine operating on town gas of average quality is in the region of 20 c.ft. per B.H.P.-hour.

An example of a modern type of small horizontal engine is also shown, this developing 12¼ B.H.P. on town gas. The set shown is driven by a 6-KW. "Crompton" dynamo and is used for stand lighting purposes. This engine is fitted with variable admission governing giving the same steady driving as the larger engines. It is perfectly balanced and operates almost noiselessly. Another interesting exhibit consists of a new type of oil engine, shown for the first time. This is a two-stroke vertical crude-oil engine which has been developed for small powers. It operates on crude and residual fuel oil or on refined oil. The engine shown at work in the exhibition is of the electric lighting type giving 14 B.H.P. normal working load at a speed of 450 r.p.m. This new type marks a considerable advance on the ordinary two-stroke engine fitted with crank chamber compression. It has a separate air-scavenge pump which ensures a thorough scavenging during each exhaust stroke, and leaves the inside of the cylinder with a charge of pure air to mix with the fuel oil as this is sprayed inside the combustion chamber. The result is to obtain greater power, better economy, and a clean-working engine. The engine is specially suitable for dynamo driving or for belt driving for industrial purposes. The engine has pump lubrication fitted to all the main moving parts; these being entirely enclosed within a crank chamber, and easily accessible through removable doors on the crank case.

THE FOSTER INSTRUMENT COMPANY.

In the present state of technical knowledge in the matter of heat control, it is hardly necessary to emphasize the need of a pyrometer for every important heating process. Only by the systematic use of suitable pyrometers can good results be repeated and bad results avoided with certainty and regularity. Consequently the stand of the Foster Instrument Company, on which are displayed all types of pyrometer, is of marked interest to gas engineers. In those cases where the installation is a simple one, the component parts of the pyrometers made by this Company are all standardized on an interchangeable basis, and the pyrometer is made up as a unit, thus securing the greatest simplicity with consequent low cost of installation and upkeep. The ability to measure from a distance the temperature of an inaccessible part of a furnace is often a matter of great convenience; and for this work the radiation pyrometer is pre-eminently useful. The Foster "Fixed-Focus" radiation pyrometer is simple and robust for this purpose. There is no colour-matching, and the apparatus can be placed safely in the hands of the ordinary furnaceman. The receiving tube of the instrument is pointed at the particular part of the furnace or body whose temperature it is desired to measure, and this temperature is automatically shown on the scale of a portable indicator, held in the hand of the user. No levelling or locking is needed, and the action is practically instantaneous; ten to fifteen seconds being sufficient to secure a steady reading. Space forbids a lengthy description of the numerous instruments demonstrated on this stand; but all interested in fuel economy and its scientific utilization will do well to visit the exhibit of this firm.

PLYMOUTH GAS COMPANY'S STAFF AND WORKMEN.

To mark their appreciation of the efforts put forward by the staff and workmen, and the happy relations that have existed between them and the Company during the past financial year, the Directors of the Plymouth and Stonehouse Gas Light and Coke Company have arranged for the whole of the men employed by them, together with their wives, to have the opportunity of visiting the British Empire Exhibition. Their desire is that "not only should their employees have the chance of inspecting the unique and innumerable treasures that have been brought together from all parts of the great British Empire, but also the remarkable exhibit that has been organized by the whole gas industry." A special train left Plymouth last Saturday morning with a party, and accommodation has been reserved on trains that will leave on June 14 and 28. Each man over 18 is provided with two return tickets for himself and lady, together with 10s. towards expenses, and each boy under 18 with one ticket, together with 5s.

DIPLOMAS IN GAS ENGINEERING.

Two Successful Candidates.

We have received from Mr. Walter Hole, the Organizing Secretary of the Education Scheme of the Institution of Gas Engineers, the results of the examination for the Diploma in Gas Engineering, the oral and final stage of which was concluded on Monday, the 26th ult. In all, seven candidates presented themselves, of whom two were successful, one with distinction. These were:

Mr. P. C. GARDINER, of Tottenham (with distinction).
Mr. J. HOOD, of Shrewsbury.

As this is the highest certification the industry has to offer, in order to ensure that it should be awarded to those, and only those, who have very high qualifications, it has been necessary to fix a correspondingly high standard for the examination. Possibly some of the candidates have not fully realized this. In any case, they have not enjoyed the benefits of a sustained and well co-ordinated course of study such as is provided for under the scheme. However, as time goes on, and the stream of students, properly prepared by their "Course" studies in the lower grades, flows forward to the higher grades, and those who successfully negotiate these, and are prepared adequately to continue their studies on both the technical and practical sides, proceed as candidates for the Diploma, it may be confidently anticipated that the above somewhat disappointing results will be greatly improved.

Meanwhile, it is hoped that the unsuccessful in the present examination will not accept defeat in this their first attempt, but will, by close and continued study, prepare themselves for success at some future time.

The results in the Ordinary and Higher Grades, involving as they do in many cases the issue of the work in cognate subjects done in the technical institutes, may not be ready for another week or two.

EVENING STAR LODGE, No. 1719.

Owing to the recent death of Bro. Samuel Spencer, who was one of its oldest and most beloved members, the Evening Star Lodge was in mourning at its meeting held on Wednesday, May 28, at Freemasons' Hall, Great Queen Street, London. The W.M., W.Bro. Rae P. Normand, who presided, suitably expressed the brethren's sincere regret, and a vote of sympathy with Sir Ernest Spencer was passed.

The business of the evening consisted of the promotion of Bro. S. B. Chandler and Bro. John W. Halstead, which was carried out by W.Bro. J. Fred Wicks, P.M.; and the initiation of Mr. John A. Williams, Assistant Secretary to the Tottenham District Light, Heat, and Power Company, performed by the W.M., with the assistance of Bro. A. E. Broadberry, P.M., L.R.

Another item of business was the election for initiation of Mr. Clifford King, son of the late W.Bro. Walter King, who had been for many years a prominent and esteemed Past-Master of the Lodge. It is understood that the ceremony is to take place at an emergency meeting which is to be held in the Grand Temple on Monday, June 23, on the eve of, and in connection with, the annual meeting of the Institution of Gas Engineers. Bro. W. H. Ely, of Woking, was proposed for election as a joining member.

The usual masonic toasts were honoured at the dinner which followed, with W.Bro. Normand in the chair. In acknowledging that of "The Grand Lodge Officers," W.Bro. J. H. Brough, P.A.G.D.C., took occasion to refer to his peregrinations in South America and Australia, and remarked on the profound regard and respect for the United Grand Lodge of England which he found prevailed there.

W.Bro. Broadberry extended a cordial welcome to "The Initiate," in proposing his health; and "The Visitors" was responded to by Bro. Philip Sugg (who is related to the late W.Bro. William Sugg, P.M.), and by representatives of the Murdoch Lodge and of the Evening Star Chapter.

Thermal Conductivity Method of Gas Analysis.

There has been communicated by the United States Bureau of Standards to the "Journal of the Franklin Institute" for April an abstract of an article by Messrs. P. E. Palmer and E. R. Weaver on the "Thermal Conductivity Method for the Analysis of Gases." The principles governing the construction and operation of the gas-analysis apparatus depending upon thermal conductivity developed by the Bureau of Standards are: A platinum wire of definite length is stretched along the axis of a cylindrical cell, and is surrounded by a slowly flowing stream of the gas undergoing analysis. An exactly similar wire is exposed to a standard or comparison gas. The two wires are connected in series in an electrical circuit, and are supplied with current from a constant service. Heat is generated by the passage of the current, and the wires rise in temperature until the continuous dissipation of thermal energy is equal to the electrical energy supplied. By a proper construction of the cells, all loss of heat, except by conduction through the gases surrounding the wires, is reduced to a small proportion of the whole. In such cells, the temperatures attained by the wires will depend mainly upon the thermal conductivities of the gases contained in the cells. Inasmuch as platinum has a high temperature coefficient of electrical resistance, the resistance of the wire, depending as it does on the temperature, will have a value corresponding to the thermal conductivity, and, therefore, to the composition, of the gas. For comparing the resistances of the two wires, a shunted slide-wire, provided with extension coils, may be connected in parallel with the two wires to the source of current. One terminal of a galvanometer is joined to the common connection between the two cells, and the other is connected to the contact of variable position on the slide-wire. Since the arrangement is that of a Wheatstone bridge, the position of the galvanometer connection on the slide-wire required for no deflection of the needle is a measure of the relative resistances of the wires. The resistances of the extension coils are so chosen that the position of the contact, with respect to the ends of the slide-wire, is a direct indication of the percentage of the desired constituent in the gas mixture being analyzed. A pen automatically records the position of the contact on the slide-wire, thus indicating on a chart the composition of the gas. The resistances of the wires may also be compared by means of an unbalanced Wheatstone bridge arrangement, in which fixed resistance coils form two arms. These coils are adjusted so that the bridge will be balanced for only one composition of the gas for analysis. Either a recording low-reading voltmeter or a potentiometer, when properly calibrated, affords a measure of the percentage composition of the gas mixture.

SOCIETY OF BRITISH GAS INDUSTRIES.

ANNUAL GENERAL MEETING.

THE Annual General Meeting and dinner of the Society were held at the Holborn Restaurant last Thursday. In the absence of the President (Lord Weir) at the commencement of the business meeting in the afternoon, Mr. F. C. TILLEY (the Chairman of the Council) took the chair.

MINUTES OF LAST MEETING.

The minutes of the previous annual general meeting were taken as read, and signed.

REPORT OF THE COUNCIL.

The CHAIRMAN presented the following eighteenth annual report of the Council on the work of the Society during the year 1923-24.

We have to record with regret the death of the following members:

George Winstanley, Head of the firm of Winstanley & Co.

S. W. Tamplin, Managing Director of Donald Macpherson & Co., Ltd.

Samuel Cutler (Senior), Chairman of Samuel Cutler & Sons, Ltd.

James Hutton, Chairman and Managing Director of Alder & Mackay, Ltd.

Archibald P. Main, Vice-Chairman of Glover & Main, Ltd.

W. Cottrell, Secretary and Commercial Manager of C. & W. Walker, Ltd.

The Society wishes to offer its congratulations to the following gentlemen:

Professor Arthur Smithells, C.M.G., F.R.S., who has had the Degree of Doctor of Science conferred upon him by the University of Leeds.

Albert Cliff, J.P., elected Mayor of Stamford for the third time.

Brigadier-General G. M. Jackson, appointed High Sheriff for the County of Derbyshire.

Business Generally.—Considering the general depression in industry, firms engaged upon the manufacture of gas plant and appliances have been moderately well occupied with orders. Members may be congratulated upon the standing of the Society and the general recognition that its members can be relied upon to combine with those who make and distribute gas in giving the public the best possible service. During the past year there has been increasing evidence of this.

New Offices.—The fitting and furnishing of the new Offices of the Society in Victoria Street have been completed; and we believe they are worthy in every respect of the status and aims of the Society. We take this opportunity of thanking the members for the interest they have taken and for their generous support, which is much appreciated. We shall be glad if they will make full use of the advantages now offered. The Offices were formally opened in November by Lord Riddell, in the unavoidable absence of our President, Lord Weir. In connection with this, I might say that the cost of these offices has been mainly provided by subscriptions from the members; and I repeat that the Council feel very grateful to those members who have come forward in this way. I do say this, however—I think there are some members who will probably feel that they would like to join in this good work, and if there are any who have not sent in subscriptions, we shall be glad if they will do so.

British Empire Exhibition.—Early in the year representatives of the various bodies interested in gas met and unanimously decided that the opportunity presented by the Exhibition to show the present position of the industry must be grasped, and a fitting exhibit prepared. It was agreed that the resources of the members of our Society were ample for supplying all necessary plant and appliances, so the Council undertook this responsibility and also to obtain subscriptions towards the cost. Over £11,000 has come in from our members, which is a very satisfactory contribution, considering that the sum which we held out hopes of obtaining was £10,000. It was felt that the best interests of the industry would be served by impressing visitors to the Exhibition with the varied uses to which gas can be put without making special reference to the individual makers of the appliances used. It was therefore arranged to have what is known as a combined exhibit in a specially designed pavilion. At an early meeting of the Committee, Mr. H. Austen Hall was appointed Architect, and, his plans having been approved, a scheme to utilize the space most advantageously was drawn up—for which thanks are mainly due to Mr. F. W. Goodenough, who has again shown his marked ability in this direction. A very efficient staff of attendants has been provided; and it is believed that no detail has been overlooked to ensure that this effort for publicity on behalf of the gas industry will be thoroughly successful.

Retort Setters.—The activities of Section I. have continued unabated throughout the last twelve months; and as a result of numerous conferences with the Associated Union of Building Trade Workers and also the Federation of Gas Employers, it would appear as if their labours will soon bear fruit in the form of a satisfactory three-part agreement to which the Gas-Works' Contractors and the Men's Union would be signatories. The new National Working Rules issued by the National Wages and Conditions Council for the Building Industry created a good deal of unrest and trouble among the contractors and gas-works' operatives, in spite of the fact that it was officially announced that these working rules applied only to the building trade. It is hoped that the prospective agreement will definitely and for all time remove gas-works construction from the building-trade influence, and thus obtain for the gas industry freedom from pressure and interference on the part of the Union in respect of building-trade disputes, which are entirely outside our régime. The members of Section I. hope and trust that this agreement will be the means of promoting pleasant relationships between all parties.

Life of Gas-Meters Joint Committee.—A report of this Committee was presented at the Annual Meeting of the Institution of Gas Engineers in June last; and the survey of the work undertaken since the Committee's inception in 1914 shows that much useful work has been accomplished.

Refractory Materials Research Joint Committee.—The Report of this Committee presented at the Annual Meeting of the Institution of Gas Engineers in June last dealt with Jointing Materials for Silica Refractories—Part I. The Committee are now working in conjunction with the British Refractories Research Association in preparing their report to be presented at the forthcoming Annual Meeting of the Institution.

Taper of Plugs for Gas Taps.—Conferences have been held between a Joint Committee of the Institution of Gas Engineers and our Society with reference to a standard taper of plugs for gas-taps for stoves and fittings, and the recommendations have now been approved. It is noticed that the taper recommended has already been adopted in recent specifications.

Standard Gas-Valve Flanges.—The recommendations submitted by the Institution of Gas Engineers and our Society are now being examined by the British Engineering Standards Association, with a view to their adoption. We have had this morning a further intimation from the Patent Office that the matter is under consideration. I am afraid the Council cannot do anything to hurry this matter. It is in the hands of a Government Department, and we have to await their time.

Standard Inverted Incandescent Gas-Burners.—Further progress has been made in connection with our application to the Patent Office for the registration of the trade-mark "SOBGI;" and as soon as this has been completed, the necessary steps will be taken to issue licences for the manufacture of standard burners.

Schedule of Standard Charges proposed by the Railway Companies.—This matter has been considered by the Council; and on the advice of Messrs. Tweedy & Holt, Railway Rates Experts, of Halifax, formal objections have been lodged on behalf of the Society with the Court of Railway Rates Tribunal against the Schedules of Standard Charges proposed by the Railway Companies, in order to safeguard the interests of the members as a whole.

Retention of Exceptional Rates (*Railway Companies' Charges*).—Lists of special rates may not be necessary at present, but it is considered advisable that individual members should proceed with the preparation of these, in case they are required at short notice. The result of the negotiations to avoid the necessity for the lists will be communicated to the members as soon as possible.

Illumination Committee.—A Sectional Committee on Illumination has been set up by the British Engineering Standards Association to consider the subject of Standards in the field of illuminating engineering. A representative of our Council has been appointed on that Committee, and we shall give all the support we can.

Material for Gasholders.—At the Autumn Meeting of the Society a question of great interest to the gas industry was raised as to the advisability of setting-up a Joint Committee of the Institution of Gas Engineers and our Society to investigate the utility of steel *versus* iron sheets in the manufacture of gasholders. Since then the matter has been given serious consideration by the members of the Gasholder Section of the Society. Many varied and diverse expressions of opinion have been given on the subject, but generally the feeling among those of the most important manufacturing firms is that, for durability and for the resistance of corrosion, iron of the "old-fashioned" kind is certainly favoured; the one obstacle to its general use being the high price in comparison with steel. One or two builders suggest that an increase in the thickness of steel sheets would get over the difficulty, and also have the admirable advantage of giving the higher pressures now generally required. The question of the new iron "Armco" has also been considered, and the general consensus of opinion by users of this quality is that our own British B.B.B. iron is equal to it and more easily procured. The whole subject of investigation in this matter is one that should be kept well before us; and it is proposed that during the next six months it should receive further and more definite consideration by the industry.

National Gas Exhibition, Birmingham.—We congratulate all concerned on the great success of this Exhibition, which was visited by Gas Associations and representatives of gas undertakings from all over the country. It showed the great advancement which has taken place not only in the methods of gas manufacture, but in the design and development of appliances for its use both in the home and in industry. During the last three days of the Exhibition the British Commercial Gas Association held a very successful Annual Conference in Birmingham, at which many of our members were present.

Increasing Membership.—Efforts have been made to increase the membership of the Society; and we are pleased to report that nine additional firms have become members. I am glad to say that there are a few other firms who have sent in their names; and they are under consideration.

Bulletin.—This has been issued quarterly, and we trust it has proved useful and interesting to the members. We would again remind them that contributions respecting any matters of interest to the Society will be cordially welcomed by our Secretary. I would like to add that the Bulletin is considered by the Council to be one of the best things that has been done, but it can only continue to have a good influence and be useful if all the members will feel that, whenever they have an opportunity of sending something that should be included in it, they should do their best to write-up some useful matter which the Editor (the Secretary) can embody in the Bulletin. This will enable him to form the pages of the Bulletin much more easily, and I am sure the usefulness of it will be greatly advanced by the extended interest that all the members may take. The Council are glad to see that there is a continued increase in the number of visits paid by the Junior Associations to members' works. These are duly recorded in the technical papers, and again they are put into the Bulletin, so that all those who do not take part in these visits can see that the interests of the Junior

Associations are largely advanced by their visits to us. We are always pleased to give them a welcome.

City and Guilds of London Institute.—The Society's Prizes in connection with the City and Guilds of London Institute Examinations in gas engineering, gas supply, and gas fitting have been awarded and duly announced in the Technical Press. The Society wishes to accord its best thanks to the Right Hon. Lord Weir of Eastwood, for his valuable services during his Presidency. On his retirement he has been pleased to accept the office of a Vice-President, and we hope that we may long have the benefit of his counsel and advice. We also desire to place on record our best thanks to the Right Hon. Lord Riddell for his address at the last Annual Meeting; also to Mr. Frederick C. Tilley, Chairman of the Council, for his paper at the Autumn Meeting entitled "The 'S.B.G.I.': Its Past and Its Programme," which led to a good discussion.

The Council have much pleasure in announcing that Mr. David Milne Watson, D.L., M.A. LL.B., has accepted the Presidency of the Society for the coming year.

The CHAIRMAN, in proposing that the report be adopted, said it was rather a long one, but he thought it was justified by the extent of the work done by the Council during the year, and it showed that the Council had not been idle. In addition, the Council had had under consideration during the last few months some important matters connected with the unemployment insurance. This was a matter which was going to affect the members of the Society very much, and the Council had felt it to be a duty to deal with the question as fully as it was able. The matter had been brought particularly to the notice of the Council by the fact that the President (Lord Weir) is the President of the Confederation of Employers Associations, which had been guided most ably in their deliberations by Lord Weir. He personally had happened to be at one of the meetings when the *ad hoc* Committee's reports were considered, and it was an eye-opener to anyone to see the able way in which the matter was dealt with, and to find that the Committee dealing with this important matter was drawn from the most important men and leaders of industry in this country. The Council were also glad to draw attention to the fact that the Corporation duty had been removed. That, of course, was largely due to the influence of the Federation of British Industries, of which the Society (as would be seen from the accounts) is a member. No doubt the attention of the members was drawn to that by the size of the contribution; but he thought there would be agreement that this money was well spent, and was a very good investment. The stabilization of conditions in the engineering industry and the improvement of relations between employers and workmen had recently been brought to their notice by the most important conference presided over by Sir Alan Smith, and he would like to draw special attention to one of the facts brought out clearly and placed before the trade unions—viz.: That taking the whole of the costs of production, including wages, and setting them against the amounts realized by sales during the twelve months of 1923, there was only 2·73 p.ct. left out of which to pay dividends and profits to those concerns which were private. During the first three months of this year, however, that amount had been reduced to 0·3 p.ct. Therefore, there was no justification for any claim by the trade unions that industry was taking too much profit at their expense.

There was one other matter, and that was the importance of sectional meetings. Each of the sections had a Chairman, whose position on the Council enabled him to keep in touch with all that was being done. Sectional meetings were frequently called to deal with matters of special interest, but the Chairmen complained that there were not sufficient attendances. This was a matter in which the members of the Society could help. It was hoped, therefore, that the members of Sectional Committees would pay attention to the notices of meetings which they received, and attend the meetings, in that way helping to strengthen the Society through the sections, which in themselves combine and make the whole Society.

Mr. SAMUEL CUTLER, in seconding the proposal, remarked that he could confirm all that the Chairman had said as to the work of the Council, and as to the position of the Society and the progress during the past year. There was only one thing he wished to refer to, and that was the new offices. Neither pains nor expense had been spared in making them worthy of the Society, but there was the point referred to by the Chairman, and that was in connection with the cost. He did not think the cost of the offices had exceeded the estimates; but the subscriptions obtained had not come up to the figure which had been hoped for to make the offices what they were. The figure required, however, was a very small one, and when he said that it amounted to less than three guineas per member, he thought they would agree that there should be no difficulty in getting the sum required, in order that the whole of the expenditure would be met by the special subscriptions for which the Council had asked the members. He hoped, therefore, the members would bear this point in mind when they received a communication asking for a little supplementary subscription. It would only be a trifling matter if everybody came up to the scratch. The Council's report was a very satisfactory one indeed.

The CHAIRMAN then asked for a discussion upon the report.

Mr. R. J. MILBOURNE, J.P., F.C.S., Assoc.M.Inst.C.E., thought it was gratifying to find that so much money had been subscribed by the Society for the British Empire Exhibition. There was a point in that connection, however, which should not be overlooked, and that was that in addition to the subscriptions by the members of the Society, they had also taken up guarantees to a considerable amount. This was a matter which ought to be recorded. With regard to the standard gas-valve flanges item in the report, it occurred to him to ask whether anything could be done to speed-up the British Engineering Standards Association, with a view to getting the proposed revised table of flanges accepted at as early a date as possible. It had been under consideration for a considerable time, and it would be a great advantage to the makers of gas-valves if the matter could be settled as speedily as possible.

The SECRETARY said the Council were in constant communication with the Secretary of the Institution of Gas Engineers, who, in turn, had been in constant communication with the Secretary of the "B.E.S.A.," and it was hoped that something definite would be settled shortly.

Continuing, Mr. MILBOURNE, referring to the subject of material for gasholder sheeting, said it was gratifying to hear that the Council had not lost sight of this important and pressing matter, and made a definite promise that it would receive further consideration by the industry. Evidently, the general opinion among the most important manufacturing firms was that wrought-iron sheets had been proved beyond doubt to resist corrosion much better than mild steel. He did not agree with the suggestion that the danger of corrosion of steel sheets could be overcome by increasing the thickness of these sheets. It did not follow that the life of the sheeting would be extended proportionately to the thickness; but even if this result were obtainable, the cost of the increase in thickness would more than counterbalance the extra cost of wrought-iron sheets, in addition to which there would be an increase in the cost of carriage and erection, due to the increased weight. A more serious consideration, however, was that corrosion would still be going on with thicker sheets in steel, and there would consequently still be uncertainty as to the internal condition of the gasholder; whereas with wrought-iron sheets there was undoubtedly much greater resistance to corrosion, and consequently greater certainty as well as increased durability. In cases where the extra cost of wrought-iron sheets for the whole of the floating bell could not be considered, owing to the increased cost, he strongly recommended the use of either "Armco" or "Treble Best" wrought iron for the grip and cup sheets and the crown sheets of the holder. Shortly after he mentioned this question at the last general meeting, he was called upon to repair a holder having a capacity of about 300,000 c.ft. A number of leaks in the crown had been noticed, and had been temporarily repaired externally; but this weakness, increased by internal corrosion, caused the top sheets to tear over about one-third of the area of the crown, causing considerable damage to the side sheeting of both the inner and outer lifts, and liberating a very large volume of gas. The holder was about twenty-two years old, and a careful examination brought to light the fact that the failure was principally due to internal corrosion. Corrosion appeared to develop as rapidly on the underside of the crown as on the side sheets, and as the strains induced by the weight of the holder and gas pressure were further increased by the suction on the crown due to the velocity of the wind, the crown sheeting would be the first to fail; therefore, if trouble was to be avoided, it would appear necessary to make a careful examination and inspection as often as possible. He feared that many such accidents would happen within the next decade, as the earlier steel-sheet holders were undoubtedly getting weaker every year, and the critical point would be reached sooner or later. Scientific engineering, particularly with regard to plant which over a long period of years could only be examined externally, as in the case of gasholders, suggested that every precaution should be taken to promote the safety of the structure throughout its long life. It might be opportune to mention that when W.I. sheets were used, precautions should be taken to secure that they must be rolled from genuine puddled iron, free from any mixture of steel scrap and containing a low percentage of sulphur. In addition to the inherent natural deficiencies of mild-steel plates and sheets for resisting corrosion, a new condition arose in the composition of the gas now generally supplied, resulting in the deposit of extremely corrosive substances in gasholders and other plant, as well as in mains, services, and meters. The whole subject of corrosion and the relative value of wrought-iron and steel sheets was one of the utmost importance in the gas industry, and would well repay the trouble and expense of a thorough and searching investigation.

The annual report was then put to the meeting, and carried unanimously.

On the motion of Mr. ALBERT CLIFF, seconded by Mr. A. W. GLOVER, the accounts for 1923 were adopted.

ALTERATION TO THE RULES.

Mr. CYRIL G. DAVIS moved the adoption of the following alterations to the Rules, as recommended by the Council. The alterations were taken one at a time, duly seconded, and adopted unanimously.

RULE II. Add (n):

"To register the word SOBGI in a diamond as a trade-mark for use with gas fittings and apparatus and to grant licences to British manufacturers to use the said trade-mark upon goods made by them which are of a quality approved by the Society."

RULE VI. New Section: 13. "Makers of water-gas plant."

RULE VII. Instead of the words "The entrance fee for each firm shall be five guineas," insert the words:

"The entrance fee for each firm shall be ten guineas."

RULE XIII. Instead of the words "with the exception of the senior elective member who shall be eligible for election after an interval of one year," insert the words:

"provided that no elective member can serve for more than three consecutive years, but he shall be eligible for election after an interval of one year."

The CHAIRMAN announced that the following gentlemen had been elected to serve on the Council as the representatives of the Sections:

J. W. Broadhead, M.I.Mech.E. . . .	Representing Section	I.
Major Richard Miles, B.Sc.	"	II.
C. A. Goodall	"	III.
R. B. Hodgson, M.I.Mech.E.	"	IV.
Lt.-Col. W. R. Glover, C.M.G., D.S.O.	"	V.
Kenneth Aird	"	VI.
Philip H. Sugg	"	VII.
E. J. Davison, M.I.Mech.E.	"	VIII.
J. N. Bickerton	"	IX.
G. H. Pearson Perry	"	X.
H. J. Donkin, M.I.Mech.E.	"	XI.
Joseph Taylor	"	XII.

NEW CHAIRMAN AND VICE-CHAIRMAN OF COUNCIL.

Mr. R. J. MILBOURNE moved the election of Mr. Wilfrid Drake as Chairman of the Council of the Society for the ensuing year, and in doing so spoke of the splendid work Mr. Drake has done in the past.

Sir ARTHUR DUCKHAM, in seconding, said he had served under Mr. Drake on Section I. during the past two years, and he assured the members that they could not have a more efficient and hard-working Chairman, or one more capable of sustaining the dignity of the Society.

The CHAIRMAN also added a tribute to the work of Mr. Drake.

The proposal was then put to the meeting, and carried unanimously.

Mr. DRAKE, in acknowledging his thanks, said he had looked upon this matter, for a considerable time, not with a great deal of pleasure, because Mr. Tilley had put in so much work during the past twelve months that he could assure the members it was no sinecure for anybody to follow him. Regarding what Sir Arthur Duckham had said as to the work in Section I., undoubtedly a great deal had been done, but he personally did not intend to take the credit for it. What had been done could not have been accomplished without the cordial support of all the members of the Section. Indeed, it had been more than support. In Section I. they had been a little family of their own, and they had been happy together. The friendly feeling that had manifested itself in that Section had brought to bear on the industry an influence of which they were going to reap the benefit shortly in connection with the alliance between the Federation of Gas Employers and the Amalgamated Union of Building Trade Workers in Section I. of the gas industry, by means of which it had been possible to place the brickwork in connection with gas-works—furnace building, retort setting, &c.—entirely outside the scope of the influence of the building trade, and free from the constant turmoil taking place in that industry. He accepted the position of Chairman of the Council with a great deal of diffidence, but if he could keep up to the standard set by Mr. Tilley during the past twelve months, he would be more than satisfied.

Mr. DRAKE then moved the election of Mr. B. B. Waller as Vice-Chairman of the Council. He said that in attempting to eulogize one another on these occasions they sometimes told lies [laughter], but in this case he was going neither to eulogize nor tell lies. He wanted to say, however, that it gave him the greatest pleasure to move this resolution, because Mr. Waller had been a most conscientious worker on the Council.

Alderman GEORGE CLARK seconded, and said he knew it was only Mr. Waller's diffidence that had kept him back for a long time, because before the time when he himself was Chairman of the Council, Mr. Waller ought to have held the position. Even now they had had literally to drag Mr. Waller forward.

The motion was carried unanimously.

OTHER OFFICERS.

On the motion of Mr. E. J. DAVISON, seconded by Mr. C. A. GOODALL, Mr. Charles Clare was elected Hon. Treasurer.

Alderman F. TEMPLER DEPREE, J.P., moved the election of Mr. Samuel Cutler as Hon. Secretary. Mr. CYRIL DAVIS seconded; and the motion was carried unanimously.

Mr. CUTLER, expressing his thanks for the election, said he had occupied almost every executive post in the Society at one time or another, and he had hoped that he might remain in the background now. He was, nevertheless, pleased that he had been asked again to do some work for the Society.

On the proposition of Mr. F. J. GOULD, seconded by Lieut.-Col. W. R. GLOVER, Mr. F. C. Tilley was unanimously voted an elective member of the Council.

Mr. TILLEY said it seemed to be the usual process now to elect the retiring Chairman to the Council, but it had the advantage that it kept the late Chairman in close touch with what was going on. He would like to say, as an encouragement to Mr. Drake, that the past year had been one of the most pleasant he had ever passed through. There had been a great deal to do, but every one had been extremely kind in assisting him and in doing everything possible for the Society. In this way the Chairman's work had been made much lighter, and Mr. Drake need not fear his year that was coming.

Mr. J. WILFRID DRAKE proposed, and Mr. J. W. BROADHEAD seconded, the election of Alderman George Clark, and Messrs. R. J. Milbourne, Albert Cliff, and F. J. Gould as elective members of the Council.

The motion was carried unanimously, and Alderman CLARK expressed the thanks of his colleagues and himself.

Messrs. Cash, Stone, & Co. were re-elected Auditors at a fee of five guineas, instead of three guineas as previously.

VOTES OF THANKS.

A hearty vote of thanks was accorded the Council for their services during the past year on the motion of Alderman F. TEMPLER DEPREE, seconded by Mr. G. H. PEARSON PERRY.

The CHAIRMAN briefly responded.

The PRESIDENT (Lord Weir), who had arrived late, moved a vote of thanks to the Hon. Treasurer, the Hon. Secretary, and the Secretary for their services during the past year, which was seconded by Mr. TILLEY, and carried with acclamation.

In the absence of the Hon. Secretary, the SECRETARY acknowledged the vote of thanks.

This concluded the business part of the meeting.

Lord WEIR, who received a most cordial welcome, then proceeded to deliver the following

PRESIDENTIAL ADDRESS.

When you conferred on me the honour of presidency of your Society, I advised you of my ignorance of your industry and the necessity for improving my education in gas matters. Unfortunately, due to lack of time and opportunity, that ignorance still prevails, and I find myself confronted with the task of preparing an address which, for many reasons, ought to be of a technical character. If I were a journalist instead of an engineer, possibly mere ignorance would not have prevented me from delivering a most convincing technical declaration—in fact, my highly-esteemed predecessor, Lord Riddell, devoted his address to giving you excellent advice on how to sell gas. However, after consideration I have decided to avoid the pitfalls of technicalities, and to offer you a few reflections on industrial progress which may be achieved, and certain of the difficulties and handicaps which stand in the way.

INDUSTRIAL PROGRESS—POSSIBILITIES AND HANDICAPS.

The subject has at least a measure of novelty as a presidential address, and if in its treatment I may verge at times on issues which shade from industrial to political in colour, I can only say that one of the main difficulties in achieving progress in industry is that during the last few years the larger industrial problems have all tended to become political factors. In the past, British industry was built up on the work of the industrial leader and his workers; but to-day its future is decided to a large extent on the floor of the House of Commons.

At a time like the present, when a considerable degree of pessimism exists, when confidence in the future of some of our industries is at a low ebb, when the new world promised to our workers, and (let me say) promised in all sincerity at the time, has not materialized, and consequent unrest prevails, a review of some possibilities realizable under certain conditions may have rather more than an academic interest.

Idealism by itself as a working policy is insufficient; but a measure of it is essential as the background of any successful constructive policy in which imagination, humanity, and sentiment must also find a place. The real basis on which we can found our optimism for the future is our appreciation of the existing waste in our commercial and industrial activities—the waste in material, the waste in human effort and energy. Education, technical experience, and scientific research reveal to us the existence of this waste on all sides, and on a gigantic scale. The slightest reflection warns us that we are doing very little as well as we know how to do it. It is on an appreciation of this that the thoughtful socialist builds up his case for drastic change in our social system. The supreme difficulty is that he rarely appreciates anything other than the waste, or if he does see the difficulties of its elimination, his suggested methods are clearly provocative of even greater evils and troubles. His impatience is largely a simple reflection on the fallibility of human nature. Our educational system offers wide and ample opportunities for acquiring abstract knowledge of theoretical perfection, but in the practical application our keenness and enthusiasm are blunted by complications caused by past ignorance, lack of vision, and stubborn vested interest.

CONSERVATION OF FUEL.

No originality is claimed for taking as the first example the conservation of our fuel and the economical generation, transmission, and distribution of energy. It has been the subject of exhaustive investigation, but no one can yet claim that it is being dealt with effectively, or in any way in proportion to its value and importance. Cheap and abundant heat, light, and power are fundamental essentials of any prosperous, social, and industrial community, and unequipped with these it will be severely handicapped in our modern industrial world.

The consumption of energy per head of population is a definite reflection of the productivity of a country, and the wages and standard of living are closely related to the same factors. The most recent British figures show a consumption per head of electric energy of from 100 to 250 units per annum in our industrial

districts, and from 500 to 700 in similar U.S. districts. In this country we are placed in the most favoured circumstances as regards inherent possibilities for cheap energy supply in the form of both gas and electricity. We have a relatively small country arranged in densely populated industrial groups, with well distributed fuel resources and ample water supplies. We possess a mass of technical knowledge and experience of inestimable value, and as yet unapplied here on any great scale, and there does not exist any technical difficulty which would prevent British gas or electrical engineers from designing and producing the most economical energy producing units in the world. The possibilities are revealed in a document often quoted, but by no means so widely known as it ought to be. I refer to the Coal Conservation Committee's Report of 1918. Anyone associated with progress in British industry should possess a copy of this document; and to the best of his ability he should be a propagandist of its findings. A prominent member of the Committee was Dr. Charles Carpenter, one of your leading authorities. Among its many valuable conclusions it declared: "If power supply in the United Kingdom were dealt with on comprehensive lines, and advantage taken of modern engineering development, the saving in coal throughout the country would, in the near future, amount to 55 million tons per annum on the existing output of manufactured products, and if the coal saved were used for the production of further power, it would be possible to generate continuously not less than 15 million horse-power, which would more than compensate for the absence of large water power in this country, and would facilitate the electrification of our railroads with its attendant advantages." In its recommendations the report clearly states "that the sites for the new power stations should provide for the processes involved in the extraction of bye-products from the fuel before it is used for the production of power." An implied condition for the fulfilment of the recommendations is a closer liaison between our gas and electrical undertakings.

The Committee which prepared that report embraced the greatest authorities on every technical aspect of the problem, and its conclusions and recommendations have been strongly opposed by no one. America has adopted the policy with great success, while France and Germany are now engaged on its development. Every political party would welcome its advent here, but in spite of the valuable preliminary work done in the last few years by our Electricity Commissioners, we are still far from the creation of an enthusiastic national movement. Even to-day, power stations are being built which do not conform to the essential requirements laid down in the report.

Waste or Misapplication of Human Effort.

Turning now from the example, which mainly concerns waste of material, it may be of value to take an example which mainly concerns waste or misapplication of human effort; and here again we find ourselves touching on a question of political importance. This example is the housing of our people. From the exhaustive investigations which have been carried out on this great problem, there appears to emerge the following situation. Due to circumstances and conditions of the past—some caused by the war, others by legislation, all of them questions of a contentious nature—a position has arisen which is represented by an urgent need for the provision of (let us say) one million houses, new or substitutional, for that section of our population who are receiving to-day wages of from 45s. to 60s. per week—wage earners whose budget enables them to pay a rent of from 7s. to 12s. per week. The non-existence of these houses is a grave factor in producing and maintaining unrest, and until solved will represent a permanent threat to social and industrial stability.

Concurrently with this situation, there appears to be disclosed the fact that the building industry as it stands is unable to do more than fulfil the everyday demands for commercial and industrial buildings and the provision of houses for those who are better-off than the section of the population referred to. The building industry evidently can meet the normal annual demand for housing, but it cannot cope with this accumulated deficit of working-class houses. Two main obstacles appear to exist. First, the cost of building houses under to-day's conditions and the possible rents payable cannot be reconciled on an economic basis. Secondly, even if the economic aspect be disregarded, there is not enough skilled building labour available to carry out the emergency demand for homes along the normal lines of the building trade. For four years this situation has existed, and we still await a solution. All the post-war building schemes have been based on the principle that the State and/or the local authority must make up the difference between the economical rent and some assumed rent which the tenant can afford to pay. Under the latest scheme this principle is evidently to be continued, but on a much wider and more costly scale. It is of some interest to contrast this situation with that of the proposed payment of continuous unemployment benefit without contributions. In one case the State, the workers, and the employers through the insurance fund give a maintenance allowance; in the housing case the State and local authority bridge the gap between the economic and the possible rent. If the principle involved in both these cases be accepted as a general one, then it becomes difficult to see how its continuing application can be stopped. By the reduction in wages and a concurrent and equivalent extension of the principle, it is obvious that we shall arrive at what has been termed the "servile state."

It is an extraordinary reflection that along with an unemployment situation unexampled in history there should be existent an unfilled demand for labour, and further a demand which can only be met by British labour. It is assumed that, if it were possible to import either houses or skilled building labour, there would be no real housing problem. The problem is to produce a large number of homes for the people in a specific time, and to do so without affecting the building trade. It is basically an emergency problem to be met by emergency measures. To this great problem let us apply our memories and our imagination. During the war many lessons were learned and much production experience was gained. One of the lessons we had to learn was how to produce articles formerly produced by skilled craftsmen without these craftsmen and by the use of unskilled and female labour. We learned that, given a big enough demand for a standardized product, and given careful consideration of the planning of methods and of subdivision of processes, not only could we produce with ease, but also at lower costs and with higher earnings than had ever been done before.

The essential factor to ensure success was a complete disregard of precedent and of tradition in method and process, and the application of imagination and ingenuity. In the preparation of the standard designs, the new processes had to be postulated and so subdivided and simplified that the operations could be carried out by anyone of ordinary intelligence after a few weeks' training. The application of these principles to the housing problem is worthy of the most careful consideration, and it is a curious reflection that none of our post-war housing schemes shows the slightest regard to these lessons of the war. A careful review of all the schemes fails to disclose the exercise of any imagination or any appreciation that the problem is novel and unique, and can only be solved by novel and unique handling. Why cannot the design of these houses be studied with the vision essential in the design of something which is to stand for 50 years and suit the conditions of 25 years hence? Is there any sound objection to the absolute standardization of the design of these houses so that the waste and overlapping of existing house-building services may be avoided? Standardization carries with it immense savings in every direction, apart altogether from the saving in labour. Why should we lack labour with a million unemployed? At the moment we are suffering from having neither the houses nor the work for our people; and no attempt is being made to translate these conditions into effective action. If this section of the housing problem were dealt with in an imaginative way, and as a production problem, there is no sound reason to prevent these houses being made available on an economic basis.

Two examples have been taken, one of material waste, the other of human energy waste, together resulting in unnecessary burdens on existing industry apart from the grave social and political reactions. They are typical of many of to-day's industrial and economic problems. As burdens they maintain the high production costs in our export industries, hinder trade, cause unemployment, and tend to force down wage rates in the export trades. Decreased output increases cost unless you can decrease your standing charges. Naturally our output has decreased, but our charges have gone up, not only in rate but also in total, and little is left for wages. Both examples are domestic in character and within our own control. If they are not remedied, and evil results follow, we can only blame ourselves.

What then are the main elements which prevent a great national effort to solve some of the great problems typified by the two examples given? Naturally the disturbing and handicapping elements are many and varied, but in considering them we are inevitably led to review our method of selecting and administering government.

It is assumed that all parties have for their aim the good of the people; but in seeking a definition of this it is found that the term connotes different kinds of good to different people. Even where all agree on a particular kind of good, there is wide divergence as to how this is to be achieved, and according to these variations of objective and methods we find the community split up into various political parties. Each tries to advance its own particular school of thought by attacking that of its neighbour, depreciating its advocates, obstructing and preventing the introduction of its measures, and generally carrying on an antagonistic campaign. Here surely is a gigantic waste of human energy, one would imagine, and yet it is the method which experience has evolved through the centuries as being that best adapted to the nature of our people. When, however, one of these political parties places in the forefront as one of its aims the abolition of the existing structure of society and the substitution of another, and when that existing form, however imperfect, has the merit of being a gradual evolutionary growth developed and adapted to human needs, then it is natural that ordinary confidence in the stability of the structure will begin to pause. When, further, the party which proposes to recreate society gains in power and is no longer a voice in the wilderness, and the possibility of a drastic change in the activities and amenities of life seems to be coming within range, then confidence in the future shrinks, especially when that future form of social organization is unexplained, indefinite, and, so far as can be seen, totally outside all human experience. It is this doubt as to what the future holds which paralyses enterprise, and prevents the adventuring of capital; and this, drying up the springs of commerce and industry, delays the work which would give our thousands of men employment.

When the avowed purpose of a growing section of the com-

munity is to attack by all means and render abortive the efforts of another section engaged in directing the production of wealth, in order that they themselves may secure that direction and the distribution of wealth, what other result can be expected than that progress should halt and expansion stop till some semblance of stability reappears? No doubt the practical development of great national schemes of production must inevitably impinge at one stage or another on what we term vested interests. Progress can only be achieved by such interests deferring to the wider national good; and the spirit which can bring this about can only be evoked by bringing into the light the salient facts, the undeniable figures on which enterprise and progress are based. If to these is added a Government policy of thinking and guiding the country on lines of ordered industrial evolution, and not on those of regularized appropriation, then I believe that much of the resistance of these vested interests would be subdued and their co-operation secured. This lack of security, and its resultant want of confidence attributable to the causes I have mentioned, is to my mind a major factor in the industrial and commercial depression of to day, and in preventing the realization of progress in the examples cited.

THE FREEDOM OF EMPLOYMENT.

A further factor in the situation is the attitude and policy of the Trades Unions in regard to freedom of employment. We see on one hand improvements and simplification in process and method, changes brought about by improved technique and invention, all involving changes in the labour required, while, on the other hand, we have the inflexibility and rigidity of Trade Union policy which prevents the free use of that degree of skill which the newer technique has made available.

If the structure of industrial organization requires some rearrangement, as we are told by its critics, the tenets and outlook of Trade Unionism are no less in need of revision. The realization by the community of the extent to which Trade Unionism is now operated, is obstructing schemes of employment and denying opportunity to workless men, is coming but slowly; when it is realized, it will be seen also that the movement has outworn its legitimate function, and that unless a broader and more enlightened spirit animates it in the near future, its narrowness, sectarianism, and autocratic domination will be a menace to the country's well-being under any government—Socialist or other. Freedom of employment is becoming more and more necessary as industry becomes specialized and products are standardized, and in the special circumstances of to-day its denial by Trades Unionism adds a further obstacle to the solution of several of our pressing post-war problems.

In industry itself there exists to-day, especially in the workshops as between the workers and the managements, a genuine and healthy desire to create a franker and more sincere spirit of negotiations, of parley, and of co operation; but it is a matter of regret that the effectiveness and potential value of this spirit are almost completely nullified by the political aspirations of Trade Unionism. Even outside the workshops there exists a mass of valuable negotiating machinery to deal with and settle differences and disputes—machinery which is capable of remedying many evils and of securing a sweeter and better industrial atmosphere, were its efforts not being consistently obstructed by political expediency.

Were the organized employers, Trade Unions, and leaders of political parties to come together and agree to approach and treat industrial questions free from political bias and considerations, and with a single eye to the well-being of the country as an industrial unit, the influence of such a change in attitude would in itself re-awake confidence and enterprise, and result in higher productivity, reduced on-cost charges, and better wages.

To crystallize the profession of faith of such a composite conference into a formula might seem a difficult task, but it might well be reduced to a series of simple declarations. These would embody—

The recognition of a truce or armistice in industrial and political action of an aggressive kind.

An undertaking that, whatever the beliefs of the respective parties as to the ultimate form of our social system, any change meantime would be effected in a constitutional way, and that they would encourage the development and improvement of the present system.

The ultimate welfare and prosperity of the workers could best be realized by the joint efforts of the respective organizations of employers and employed without any State intervention. This would carry with it the development and support of legitimate trade-union organization of an industrial character.

The onerous responsibility and duty which rests on the employing class, in regard to the efficient utilization of labour by its application to industry through improved methods and processes and organizations, is recognized.

The parties will consistently support and advocate enterprise and development in method and process, in which direction much work still remains to be done.

It is recognized that our present system embraces and must embrace what is termed "profit." From this source of our social reform developments are rendered possible, and from the same source the continuous development of industry, improved process and method, and employment must spring.

It is agreed generally that costs of production have been enhanced in certain trades by rigidity of policy on the part of organized labour.

Without attempting to lay down any specific changes which should be made, the belief is indicated that beneficial results would accrue from a new spirit of elasticity and toleration affording greater freedom of opportunity to all classes of workers.

Sir ARTHUR DUCKHAM, in proposing a vote of thanks to Lord Weir, said he was certain they all appreciated what Lord Weir had done for the Society. They also appreciated the fact that a man with so many industrial and public calls upon his time should have given them an address of such magnitude and such weight as the one they had just listened to. That Lord Weir should have spent the time to develop his theme as fully as he had in his address, was a great compliment to the Society, and everyone would thank him heartily for his kindness. Lord Weir represented the type of man required in this country to-day. Lord Weir was really a politician—he did not mean to be rude to him in any way [laughter]—but he was a politician, and a man with a statesmanlike brain who thought out these problems and presented them in an understandable and practical way. What we wanted to-day was practical politics; we were tired of theoretical politics. This reminded him of the fact that last week he himself was speaking at Cambridge, and had followed one of the members of the present Cabinet who had been speaking on the subject of assistance to the poorer or working classes. The whole of that gentleman's address was based on the position of these people, and he had described how they were spending their lives trying to remedy it. In reply to that, he (Sir Arthur) told the audience that he spent his time making money, and that he found that attacking the problem from that point of view he got a great deal more sympathy than from the purely theoretical standpoint. He was glad to say that at the finish the two viewpoints coincided with the results which both of them wished to obtain. He felt to-day we ought to get away from this molly-coddling by the Government of the people of this country. We were spoiling our nation and ruining our people. Lord Weir would tell them (and they all knew as well as he did) that a man who had been on the dole for two years could not work. Such men were incapable of working when they got back to real workshop practice. Lord Weir had made certain suggestions, but he dared not hope that our present Government would adopt them. They would, however, form the basis in the future for a new backing for a party which would second such recommendations. Then Lord Weir had attacked the problem of waste. Those in the gas industry presumably spent their lives in trying to save waste, and the gas industry had the ideal of saving the waste of fuel in this country. At one time the gas industry was a collection of small units—independent, and hardly on speaking terms one with another, and without a common voice. Fortunately, however, during the last few years the gas industry had become a great entity, and that entity was greatly indebted to the work done by the National Gas Council and Mr. Milne Watson, their new President. The Society was indeed lucky in its Presidents. It was to the National Gas Council that the industry must look for progress in the saving of fuel and in getting greater fuel economy throughout the country. Lord Weir also referred to the report of the Coal Conservation Committee. No doubt many of them had read it. It was a wonderful document; but the Government (as was so often the case) did not carry out the recommendations of its own Committee. The Government did not proceed with them at a time when they could have been applied and would have been received with sympathy. Instead, they let the thing slide, and there existed to-day a hard-working body, the Electricity Commissioners, who did not represent in any sense the proper saving of fuel in this country or the proper consideration of the fuel problem throughout the country. He was, however, certain that the time would come when the Government would realize that some body must be formed to tackle the whole fuel problem of this country.

Mr. F. C. TILLEY said he wished to second the vote of thanks to Lord Weir, who had presented to them one of the profoundest addresses that he had listened to in the course of his life. He had dealt with matters that sank so deeply into their everyday lives that it was difficult at a moment's notice to express oneself. However, he hoped that emphasis would be laid upon the importance of drawing together all the different sections that made up the industrial unit in such a way that it would not be affected (as was so often the case) by outside influences, but would be assisted by the sound advice of such men as Lord Weir. The feeling of doubt, to which reference had been made, in the conditions to-day was, he was sure, preventing quick recovery from the disastrous war. There was doubt in every direction. There was no certainty; and it seemed to him that each individual should try to get a direct push towards stabilization, and use his utmost endeavour to sweep away the outside influences causing the unrest and want of progress and recovery in the industrial situation. He would not ask them to vote upon the motion, but to rise and give their heartiest thanks to Lord Weir.

The vote of thanks was carried enthusiastically.

Lord WEIR, having expressed his appreciation of the vote of thanks, said he had enjoyed his term of office as President, and had done so because everyone had been so kind and considerate to him. His great regret was that time and opportunity had denied him the pleasure of meeting the members oftener, and getting to

know them better. If, however, he had been able to do anything for the Society, it had been a real pleasure to him, and his only regret was that, living as he did in Glasgow, he had not been able to help more. Although his term of office had come to an end, he assured them of his continued interest in the work of the Society. If at any time they felt he could help them in any way, he would ask them please to command him. [Loud applause.]

Continuing, Lord Weir said the next item on the programme was the induction of the new President. He himself was sorry to go, but he was glad to welcome Mr. Milne Watson. "Presidents come and Presidents go, but the Society goes on from strength to strength" [laughter], and it was therefore his good fortune formally to introduce to them their new President, Mr. Milne Watson. He had said "formally introduce," because any real introduction was really superfluous. Their new President was as well known to the gas industry as Mr. Ramsay MacDonald was to the Socialist Party. [Laughter.] Might he carry that a little farther and say that Mr. Milne Watson commanded the loyalty and encouraging respect of all in the industry? [Renewed laughter.] They were indeed fortunate to have as President one who had done so much effective work in re-vitalizing the gas industry. Mr. Milne Watson's energy and foresight were evidenced by the great undertaking he so ably conducted. Did it not stand as an example to emulate of a British public utility enterprise—a very, very great example of private enterprise combined with wise safeguards for the public? Under their President, Mr. Milne Watson, he was confident that the Society would increase in authority, respect, and influence. It was with great pleasure and a profound sense of honour that he asked him to take the chair, and those present to accord him a very hearty welcome.

Mr. MILNE WATSON (who was given an enthusiastic welcome) expressed his thanks for the extremely cordial way in which his induction into the chair as the new President had been received. He assured the members from the bottom of his heart that he appreciated his election as President as one of the greatest honours that had come to him in all the course of his business life. He felt it an honour for many reasons. If they glanced at the list of Past-Presidents, they must realize the pleasure it gave him to occupy the chair that had been filled by so many distinguished men, not the least of whom was the retiring President, Lord Weir. He felt a considerable sense of bashfulness in being elected the new President, because when he looked down the list of names he saw that the Past-Presidents were almost all leading lights in the technical world, while he was but a layman entirely. Therefore, he was very much in others' hands on technical questions; but none the less he esteemed it perhaps a greater pleasure and a greater honour that he should have been elected President. When he came there that afternoon, he had asked if anything in the way of a formal speech was expected of him, but he had been told that it was not, but that his turn would come in twelve months' time. [Laughter.] Therefore he did not intend to say more on this occasion than again to thank the members in the most cordial way for the honour they had done him, and to express the hope that he would be spared in health to give useful service during his year of office.

This closed the meeting, and the members were then invited to tea by the Council.

ANNUAL DINNER.

In the evening the members dined together with a number of guests; the President, Lord Weir, being in the chair. To the left hand of the President were: The President-Elect (Mr. D. Milne Watson, D.L., M.A., LL.B.), Prof. Arthur Smithells, Mr. Thomas Hardie, Alderman George Clark, Col. C. F. T. Blyth, Mr. Samuel Cutler, Mr. A. A. Johnson, and Mr. Austin Hall. To the right hand of the President were: Mr. Frederick C. Tilley (Chairman of Council), Mr. Samuel Tagg, M.Inst.C.E. (President of the Institution of Gas Engineers), Mr. J. Wilfrid Drake, Mr. J. Ferguson Bell, Mr. Charles Clare, Mr. F. W. Goodenough, Mr. Cyril G. Davis, Mr. C. F. Botley, Mr. Walter Dunn, and Mr. J. Wesley Whimster. In the Vice-Chairs were: Lt.-Col. W. R. Glover, Mr. C. A. Goodall, Mr. B. B. Waller, Mr. Charles E. Bennett, and Mr. John Orme. It was a large gathering; and with an excellent dinner and a splendid programme, an atmosphere of good spirits and happy feeling pervaded the whole of the proceedings. A number of toasts were honoured, and an excellent programme of music was rendered by Miss Millicent Russell and Miss Constance Izard, Mr. Stuart Robertson, and Mr. Ronald Gourlay; Miss Winifred Gardener being the accompanist. The first toast was "The King," which was very heartily honoured, accompanied by three cheers.

"THE SOCIETY OF BRITISH GAS INDUSTRIES."

Major R. STROTHER STEWART, M.P., said he appreciated very much the honour of proposing what was really the toast of the evening. He did not know why a Member of Parliament had been selected for this purpose; he believed, however, that he was deputizing for Mr. Frank Hodges. There was no doubt that the gas industry was one of the most important in the land. It was an industry which was typical of those which thrived on competition; and yet it always managed to keep ahead of its competitors. Through the studies and researches of the industry, the members of it were always able to adapt themselves and their ends to requirements, so far as illumination, power, and heating were concerned—particularly in respect of heating. Not only was gas more closely allied to coal than electricity, but the industry had proved that it was a greater factor than its rival in respect of household and industrial heating. Furthermore, the bye-products of coal carbonization were also a most important factor. He noticed the Society were approaching their majority, and that they were taking part in the co-operative Gas Exhibit at the British Empire Exhibition. The membership he also observed continued to increase; and, on the scientific side of the business, researches were being conducted in conjunction with the Leeds University. He was also struck by the list of the Presidents the Society had had. It suggested that the Society, in selecting their Presidents, tried to serve a double purpose. It was clear that their policy was to ask a man to be President who was distinguished in the country, apart altogether from the gas industry. As a lawyer, he was interested to see that they had honoured some of the senior members of his own profession. They made choice of their Presidents because they wanted to pay a compliment to men who had served their country well, and to whom they wished to do honour. Many things had happened in the past year in connection with the gas industry, which would make the year of office of Lord Weir one to be remembered.

Lord WEIR, in reply, said they were fortunate as a Society in many ways, and in none more so than in having the toast of their Society proposed in so able a manner by Major R. Strother Stewart, M.P. On behalf of the members, he welcomed him most heartily, and acknowledged their warm indebtedness to him for his appreciative allusions to the Society and its work. He also wished to thank him for his very kind personal references. In industry they particularly welcomed the presence of members of Parliament at their annual reunion. Their presence was indicative of the very real and live interest which now appeared to permeate the House of Commons in all matters relating to industrial activity; and the phenomenon was of real import to the country. Even a corporate body such as their Society was, after all, very human; and the measure of appreciation which Major Stewart had accorded them was particularly welcome to their self-sacrificing office-bearers. When he spoke of them, of course, he excepted the President, who did no work at all. [Laughter.] This was one of the reasons why he regretted that the response to the toast was not confided to someone better acquainted than he was with the work of the Society. Another reason why he should say very little that night was that he had already inflicted on many of them that afternoon a particularly heavy and boring address. ["No, no."] Another reason was that he came from a city which, as Major Stewart was aware, exported speakers to Westminster on a large scale, and they had a brand of eloquence and politics rather spectacular in character; but let him reassure Major Stewart that he would cause him no trouble that night. Speaking seriously, the members who furnished the technical requirements for the gas industry had every assurance that the work of the Society was of value to that industry; and the Society were proud to have the privilege of assisting a great British industry which could definitely claim to be progressive and far-seeing in its general policy. With considerable trepidation, he ventured to suggest that there were technical indications that the future development of the industry should be complementary to that of the electrical industry. Gas had many lessons which it could teach electricity, and much reciprocal good would come from a closer association of effort. Gas was, of course, much older than electricity; but there was every sign that it had retained its youthful activity, and that it had not passed the matrimonial age, and could well enough look after a young wife and contribute to the greater orderliness and efficiency in energy generation and distribution. If a wedding did take place, he was sure their new President would be the best man. He was quite capable of giving them both away. [Laughter.] This was hardly an occasion on which to speak of either technical or economic matters; but they, as engineers, were connected with an industry which had to stand or fall by its ability to hold its own in the world market. To-day, the fight was a hard one; and they sometimes felt that they deserved more encouragement and support than they actually received. It was when they felt discouraged, and tended to pessimism, that they appreciated the compensations of engineering; and one of the most important of these was the engineer's ability temporarily to forget the commercial aspect, and take relief in devoting himself to the scientific and technical aspects. This prevented an engineer from ever becoming a true pessimist, because to-day, to an infinitely greater extent than ever, he could see the wonderful possibilities of engineering and scientific development. The field of possible achievement grew in scope and variety the more they considered it. The growing of two blades of grass in place of one, or perhaps the making of 1 lb. of coal do what 2 lbs. were formerly required for, held a reward in consciousness of technical service, beside which the commercial reward appeared trivial. It had also the merit of being a field of effort which could be cultivated without legislation and more or less without the care of any beneficent Government, and it was the field of effort on which their country must rely ultimately for any measure of prosperity. In these days, they had really only one great cause of complaint against their Government and the House of Commons. They worked much too hard, and were much too active for any really intelligent body of electors! They helped them far too much. Hardly anyone could complain of not being affected by one or other of their manifold activities. From their birth, Mr. Wheatley, the Minister of Health, began to take an interest in them. When they were five years of age, Mr. Trevelyan welcomed them to school—and preferred to see them even earlier. At fourteen, Mr. Shaw, the Minister of Labour, invited them to become office boys; and if they got "fired" for wasting time, he now proposed to let them share in the insurance fund, so that they did not miss their attendance at the cinema. When by great diligence, or by good luck, they became gas engineers, and achieved an income of about £5 per week, Mr. Snowden began to sit up, and to take an annual interest in their affairs. [Laughter.] His interest was one which continued right down to the grave. Death, in fact, only intensified his activity. What more could they reasonably expect from any Government? [Renewed laughter.] Now, he feared he had been very frivolous that night; but possibly it was a good thing occasionally to get away from serious topics. On behalf of the Society, he again repeated their indebtedness to Major Stewart for the kind things he had said, and to all of their guests for the generous way they had endorsed them.

"KINDRED ASSOCIATIONS."

Mr. F. C. TILLEY, in submitting the toast "Kindred Associations," said it conveyed a meaning which clearly brought home to all present the fact that the Society was one of an important group of organizations which were centred round the conspicuous operations of the manufacture and the sale of gas. None of these organizations was very old; but all were well established, and were carrying on their special work with commendable appreciation of responsibility. As a body, the members of the Society of British Gas Industries had found that the more they got to know their fellow-members of the gas industry, the more they were able to appreciate their good qualities as men and their straightforwardness of purpose for the upholding of business on the best lines. In like manner their association with the societies which existed for special purposes in connection with the manufacture, development of use, and the sale of gas taught them that their aims were not strictly limited to the advancement of the gas industry from their own particular aspect, but that each member felt that the vigour of his branch was best shown when helping to form what he (Mr. Tilley) might describe as a symmetrical and vigorous tree. The members of the Society of British Gas Industries were proud of the work of collaborating with such a kindred. Those whom they were asked to toast were represented at the present gathering in goodly number. If he might first mention the Institution of Gas Engineers, he would like to say how pleased all were to find among them Mr. Samuel Tagg, the President. He represented the oldest of their institutions; yet it was not a particularly old one when they remembered that gas as a public utility service was more than a hundred years old, and was in a figurative sense hoary with age—but still, he would add, was very virile in its present activities. Then there was the Gas Companies Protection Association. He did not know if there was anyone there to represent that body; but happily there was a strong representation from the British Commercial Gas Association, with which their own Society had a great deal to do in a variety of ways. Recently they had had important relations with the Association owing to the preparations for the great exhibit which the industry had had the good fortune and privilege of joining, in association with the National Gas Council, for a business display at the British Empire Exhibition. He thought that all would agree that the whole of the component sections of the industry which had had anything to do with the display at Wembley Park had just cause to be proud of the result. That night they had with them Mr. F. W. Goodenough, and he (Mr. Tilley) was convinced that, as a Society, they had to thank him for the hard work he had accomplished in bringing about the development of that magnificent and original form of propaganda. Those of the present company who had not yet visited the British Empire Exhibition should take an early opportunity of doing so. They would not be surprised to find, in the Palace of Industry, a gas exhibit which was attracting the public in large numbers, and showing the whole world the up-to-date position which gas had attained, and demonstrating its use for all purposes in a manner not hitherto excelled. The whole Gas Exhibit was of so original a character that it could not fail to make a marked impression on the minds of those who saw it; and he was glad to be able to say, from his own observation, that it was having an effect in a way that would be of great advantage to the whole industry in the future. The National Gas Council, which must be recognized as figuratively the pulse of the industry, had grown so rapidly since its inception that it could now be said to be the most powerful, as well as the most munificent, of all the gas organizations that had been formed. With them that night was Mr. Milne Watson, the President, who was now also the President of their own Society. One of the greatest pleasures he (Mr. Tilley), as Chairman of their Council, had recently experienced was interviewing Mr. Milne Watson in order to invite him on the part of the Council to accept the presidency of their Society; and that pleasure was enhanced to a greater degree when he (Mr. Milne Watson) expressed his acceptance of the position. But Mr. Milne Watson did not give his consent without due thought, and he (Mr. Tilley) thought it was a great compliment to the Society that he should think it worth while to take time to think the matter over. However, he had signified his acceptance, and the members would give him a hearty welcome on the present occasion, as he (Mr. Tilley) had the pleasure of coupling his name with the toast, which would appeal to all by reason of its composite and thoroughly representative character—"Kindred Associations."

MR. MILNE WATSON'S REPLY.

Mr. D. MILNE-WATSON, in responding to the toast, first thanked Mr. Tilley for the kind references to himself. Mr. Tilley had referred to the work done by the Institution of Gas Engineers, and that achieved by the British Commercial Gas Association, the Gas Companies' Protection Association, and the National Gas Council. He deeply appreciated the way Mr. Tilley had expressed his feelings towards those kindred bodies. There was, he was convinced, no rivalry among those different organizations. All really were working for the same objects, which were the welfare and prosperity of the gas industry. The Institution of Gas Engineers took charge of scientific matters connected with the business; the British Commercial Gas Association took an important part in propaganda work; the Gas Companies Protection Association looked after the interests of the different gas undertakings; and, finally, the National Gas Council looked after, and took the deepest interest in, what he might call the politics of the industry when they came into the zone of those with which Major Stewart was connected. That so many members of the different organizations of the gas industry were assembled that night was to his mind a speaking testimony of unity, because all felt that really they had only one object, though they might have different organizations on definite lines and different sections working for well-considered purposes. He felt that this general activity was the best guarantee for the future prosperity of the industry. They were, as he had said, thoroughly united; and he thought the finest example of true unity was to be seen in the Gas Exhibit at the British Empire Exhibition. He was sure that all of those present who had made a visit to the Exhibition would unanimously agree that the gas display was well worthy of the industry, and one which gave their rivals of the electrical industry good cause to pause and think "when they smiled at the old industry and said it was a thing of bygone days." Lord Weir had suggested that gas and electricity should take closer family interest in each other, and "on terms," said Mr. Milne Watson, "I have no doubt that could be arranged." Mr. Bezant, in the course of that evening, had drawn his (Mr. Milne Watson's) attention to the illuminated mushrooms which were used for table decoration, and had added "You (the gas industry) could not do that!" "No," he (Mr. Milne Watson) had replied, "we will leave the illumination of mushrooms to the electrical industry." If it became a practical question of leaving the illuminated mushrooms to the electrical industry, he was sure that all present would favour that course. He felt more strongly than ever that the various sections of the gas industry were absolutely at one in thought and desire to promote the prosperity of their business. At the present time they were enjoying extraordinary prosperity, and they must not lose sight of the necessity for united and constant action in the future. That was the line of conduct that such gatherings as the present helped to impress on them. They felt that they were all members of one great body, and that if one went under it would damage some other member. He particularly welcomed the opportunity of replying to the toast "Kindred Associations."

THE VISITORS.

Alderman GEORGE CLARK, in proposing the toast "The Visitors," said that Major Stewart had intimated that he was deputizing for some other guest that night, and he (the Alderman) was in a precisely similar position, as Sir Arthur Duckham, whose name originally was associated with the toast as the proposer, was unfortunately prevented by some domestic consideration from being present at the dinner. Therefore they would unfortunately be deprived of the advantage of Sir Arthur's breezy manner, good sense, and words of wisdom which were characteristic of him in proposing or responding to a toast. He (the Alderman) was glad to see among the visitors many conspicuous members of the gas industry. He thought their presence was a tribute to the power and usefulness of the Society. He welcomed Major Stewart as a representative of the House of Commons; and he was pleased to see Mr. Tagg, the President of the Institution of Gas Engineers—a distinguished man who had won the confidence and admiration of all the members of his organization. They were fortunate, too, in having with them Mr. J. Ferguson Bell, of Derby—the first time he believed for several years. They would, he felt sure, be delighted to see a Past-President of the Institution, Mr. Thomas Hardie, who had just emerged from a long and serious illness, and who, they would be pleased to learn, was now restored to good health. Then they had Mr. Goodenough, the great propagandist in the sale of gas—a man to whom they looked more than to anyone else to get them orders, because, if Mr. Goodenough continued to create, as he had been doing, enormous increases in the sale of gas, the members of the Society were bound to benefit by it. He took this opportunity of paying a tribute to Mr. Goodenough for the splendid work he had done, and was still doing, in connection with the Gas Exhibit at the British Empire Exhibition. His had been the genius in driving power in connection with that enterprise, and in acting as the Chairman of the Executive Committee he had done magnificent work which would operate for the benefit of the whole industry. Alderman Clark then referred to the good work of Mr. Austin Hall (the Architect of the Gas Exhibit), whose layout was the subject of general admiration. The whole scheme had been conceived and the development had been controlled by a man with a master mind in architectural design, and the Gas Exhibit Committee had been extremely fortunate in having the services of Mr. Hall and those who had worked with him. Another visitor whom they were pleased to see present was Mr. C. Lemaistre, the Secretary of the British Engineering Standards Committee. There was also present Mr. J. B. Forbes Watson, the Secretary of the National Federation of Employers, of which Lord Weir was President. There was great satisfaction in having that organization represented that night, because they looked to it for great assistance in the future. There were present as visitors many more men who were prominent in the gas industry—men from the West Country and from other parts who honoured the Council by their presence. He would not refer to them individually, but would content himself with asking the members of the Society to toast "The Visitors," on whose account he would ask Mr. Tagg to make response.

MR. SAMUEL TAGG'S REPLY.

Mr. TAGG, in acknowledging the toast, said that when he received an intimation that he was expected to reply for the visitors, he at once realized that he was in for a responsible task, owing to the formidable list of men who, he was convinced, would be present. He had to thank the members of the Society not merely for their hospitality, but for the cordiality of sentiment which had conveyed to their guests that they were heartily welcome. Referring to the excellent work that was being done, Mr. Tagg said it was apparent that the heads of the British Commercial Gas Association and others were determined that the light of the gas industry should not be hidden under the traditional bushel, but that its fame as a utility service should be spread. The achievement at Wembley pointed to what the Institution had done for the gas industry in the way of education. There was an impression that hitherto it had to a large extent concentrated on chemistry and physics, and that it would in future have to extend the scope of its subjects. But if the leaders of the industry were confident that they had a purpose to serve in the life of the community, it was largely owing to the firms and individuals who to-day were represented in the Society of British Gas Industries. The efforts which had called together the men who had been concerned in the advancement of the business reflected enterprise and research work of an indefatigable character, especially on the part of those who were manufacturers of plant and appliances for the innumerable applications of gas. When they gave this due thought, they must recognize that their high position to-day was owing in a great measure to the consistent efforts of members of the Society of British Gas Industries. United to a greater extent than ever, as they were to-day, they would look forward with supreme confidence to the industry's attaining a position in the affairs of communities which under modern conditions it was so well designed, and certainly was destined, to occupy.

THE YATES GOLF CUP.

Presentation to Mr. Cyril Davis.

Lord WEIR, at this juncture, said that a duty which he did not anticipate had been sprung upon him. In front of him stood "The Yates Golf Cup," presented to the Society for annual competition. He had been asked to hand it to the winner, Mr. Cyril Davis. In performing this duty he would express the hope that the company did not now want a speech on golf, because to deal with gas was enough at one sitting. He had, however, a definite complaint to make against the office-bearers of the Society, and that was that their President had never been asked to take part in the tournament. His own experience of golf was both humiliating and mortifying—at the same time it was a jolly good game, and he heartily congratulated Mr. Davis on winning the Yates trophy.

Mr. CYRIL DAVIS said he was very proud to be the winner of the cup; and all he could say in acknowledgment was that he would be prepared to play a game of golf against his lordship on any links, anywhere and at any time.

"THE VICE-PRESIDENTS."

Mr. J. WILFRID DRAKE proposed the health of "The Vice-Presidents of the Society," and said he regarded the duty as a great privilege. On the occasion of the former dinner he had the pleasure of submitting the same toast; and Lord Weir's name would now be added to the list of Vice-Presidents, which would thereby be materially strengthened. The Society were very fortunate in their Vice-Presidents—men drawn from the different branches of the industry and the professions connected with it. They represented the different and cumulated efforts which were being made by men of knowledge and experience; and their assistance was of great value to the Society. The Society were specially fortunate in that every President was added to the list, and as these men were of influence in the industry they formed a vice-presidency of which all the members should be extremely proud. "Nothing begets success like success," said Mr. Drake, "and it is up to all of us to co-ordinate our efforts and try to peak our Society forward from meeting to meeting."

PROF. SMITHELLS' ACKNOWLEDGMENT.

Professor ARTHUR SMITHELLS, C.M.G., F.R S., said he had looked through the list of Vice-Presidents, and he saw a number of distinguished names in it, and he was proud to be included in the group. The company would scarcely expect him to reply for all the Vice-Presidents; but for his own part, he would say that Lord Weir should now be entrusted with the perpetual duty of responding to the toast, for among his lordship's many endowments was his extreme efficiency as an after-dinner speaker. If time had permitted he would have liked to say something about science—the death ray, for example—and many other things; but he would content himself by referring the company to Lord Birkenhead, who had just aired his views on certain matters in a letter in the "Times." He wanted once more to assure the Society how much it had been to him, as a man of science, to be associated with them. His association went back to an early day; and he looked back upon it as one of the happier events in his career. He had always felt that it was important for their well-being individually to come more into touch with the outer world, and especially with the great world of industry. He himself had made efforts to bring science more into relationship with industry, and in connection with the University of Leeds the authorities had set an example in their relations with the gas industry which might be followed with other industries in the country. In connection with that enterprise, he wished to acknowledge how very much beholden they were, and always had been, to the members of the Society. From the first the Society had given not only their sympathy, but their material support. He hoped they would feel that the University had responded to the encouragement that the Society had given them. There had been an enormous growth of co-operation between the wheels of science and those of industry, and it was a great gratification to himself, and those associated with him in helping on the gas industry, to notice that development; but if the industry resolved to keep up its pace, it must rely on every possible help it could get from the service of science.

An excellent vocal and instrumental programme was given by Miss Millicent Russell, Mr. Stuart Robertson, Miss Constance Izard (violinist), and Mr. Ronald Gourlay (entertainer), Miss Winifred Gardner acting as accompanist.

The arrangements for the whole day's proceedings were directed by Mr. Arthur L. Griffith, the Secretary to the Society, and were in every way effective.

MIDLAND ASSOCIATION OF GAS ENGINEERS AND MANAGERS.

VISIT TO THE STOURBRIDGE GAS-WORKS.

LAST Wednesday, in a blaze of sunshine, the members of the Midland Association of Gas Engineers and Managers met at the Stourbridge Gas-Works, where they were welcomed by Alderman S. Fiddian, the Chairman of the Gas Committee, and Mr. Charles H. Webb, M.Sc., A.M.Inst.C.E., the Engineer and Manager. The works are not large, but have many noteworthy features; and the members, who were conducted round the works under the able guidance of Mr. Webb and his assistants—Messrs. S. J. D. Williams, H. W. Allen, and F. Hammersley—found a great deal to interest them.

DESCRIPTION OF THE WORKS.

The works were established in 1835 by a Company of six shareholders, and the undertaking was purchased by the Urban District Council of Stourbridge in 1892. They are not situated in the area of the Stourbridge Borough, but immediately over the boundary, in Amblecote Parish, Staffordshire. The present district supplied comprises Stourbridge, Amblecote, Lye, Wollescote, Pedmore, Hagley, Clent, Belbroughton, and part of Wordsley, with an area of 15,308 acres and a population of about 40,000. A large percentage of the output is supplied for power and other trade uses, and there is also a heavy consumption by prepayment meters, fires, and cookers. All the housing schemes in the area are supplied with gas for bath heaters, cookers, wash-boilers, and lighting. High-pressure lighting comprising twenty-two 1000-c.p. and six 2000-c.p. Keith-Blackman lamps was installed in the High Street of Stourbridge in December, 1923.

The following comparison shows the progress made during the period the works have been the property of the Local Authority:

	1892.		1924.
Annual make of gas	96,000,000	..	334,131,000
Main mileage	37	..	70 (about)
Number of consumers—			
Ordinary	1340	..	3050
Prepayment	*nil*	..	6572
	1340	..	9622
Tons of coal carbonized	8457	..	17,232 tons coal 40,783 gallons oil
Capital	£47,500		(balance of loan) £98,519
Gross profit	£4,787	..	£26,915
Price of gas	2s. 8d.		3s. 9d., 3s., 2s. 9d., 2s. 6d., according to quantity and use.
Gas cookers in use	*nil*		5303

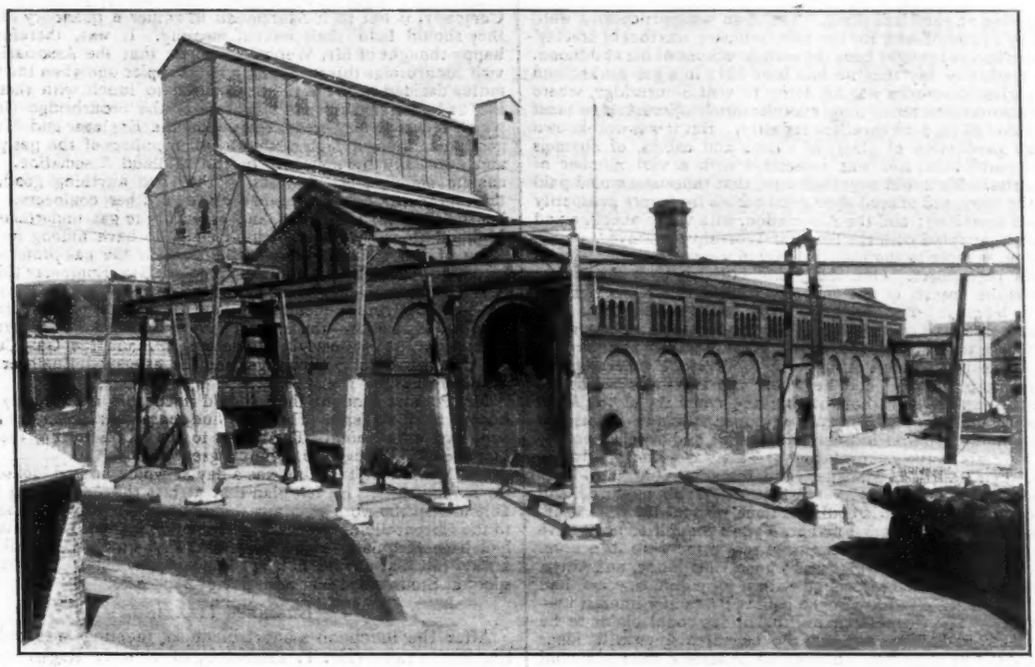
The works are served by a high-level railway siding connected with the Great Western Railway for delivery of coal, sulphuric acid for the manufacture of sulphate of ammonia, of stores for the cooker repairing and fitting shops, and for the removal of sulphate of ammonia, oxide of iron, &c. There is also a low-level railway siding for loading coke; while tar can be loaded into boats on the canal adjoining the works, by gravity from the sales tanks.

The plant comprises a horizontal retort house and a vertical retort house. The former has a capacity of 900,000 c.ft. per diem, and contains eight beds of eight retorts, 21 ft. by 22 in. by 16 in. ⊓ section, heated by Klonne regenerative furnaces and operated by a Guest-Gibbons electrically driven charging machine. Coal is discharged by gravity from railway wagons to the working pen through a crusher driven by a 10-H.P. "E.C.C." motor, and passes to a bucket elevator, driven by a 6 H.P. motor, capable of dealing with 16 tons per hour. There are two such crushers, elevators, &c., both discharging into the charging hopper.

The vertical retorts are of the Woodall-Duckham type, and consist of four settings, each containing four 5 ton retorts. A small 4½ H.P.-gas-engine supplies electric light and power for the extractor when the large engines in the power house are not running. Coal wagons are hauled up by an electric winch, and emptied by hand into the working pen and on to a coal crusher, driven by a 16-H.P. motor. From here it passes to a gravity-bucket conveyor, capable of handling 50 tons per hour, also driven by a 16-H.P. motor. These motors are interchangeable, and the crusher pit is constructed in concrete. The same telpher handles the coke from both retort-houses. The coke from the horizontals is quenched in a tank immediately adjoining the retort-house, and the vertical coke skips are run out on rails from underneath the retorts to the track, and are then taken to the yard by the telpher. Ashes are handled in the same way.

The carburetted water-gas plant is by Humphreys & Glasgow, and consists of two sets, each of 500,000 c.ft. capacity. There are three Sturtevant fans, one driven by a Greenwood & Batley 18-H.P. motor, the other two by 15-H.P. De Laval turbines. The oil storage consists of two tanks—one 20 ft. in diameter and 15 ft. high, and the other 15 ft. in diameter and 15 ft. high, having a total capacity of 67,500 gallons. The oil flows from the tanks to the plant by gravity. There is also a tar separator and water separator, through which flows the carburetted water-gas tar.

There are two steam-driven exhausters by Donkin, each of a capacity of 70,000 c.ft. per hour, and the vacuum is maintained by Donkin hydraulic regulators. The washing and scrubbing plant consists of one Livesey washer, one Whessoe rotary scrubber, and one tower scrubber. There are five purifying boxes, each 30 ft. by 20 ft. Three of these are Green's type. An 8 H P. gas-engine is used for the elevators and belt conveyor, and also drives an air compressor delivering up to 75 lbs. pressure. The backward rotation system is worked, and the gas travels downwards. The



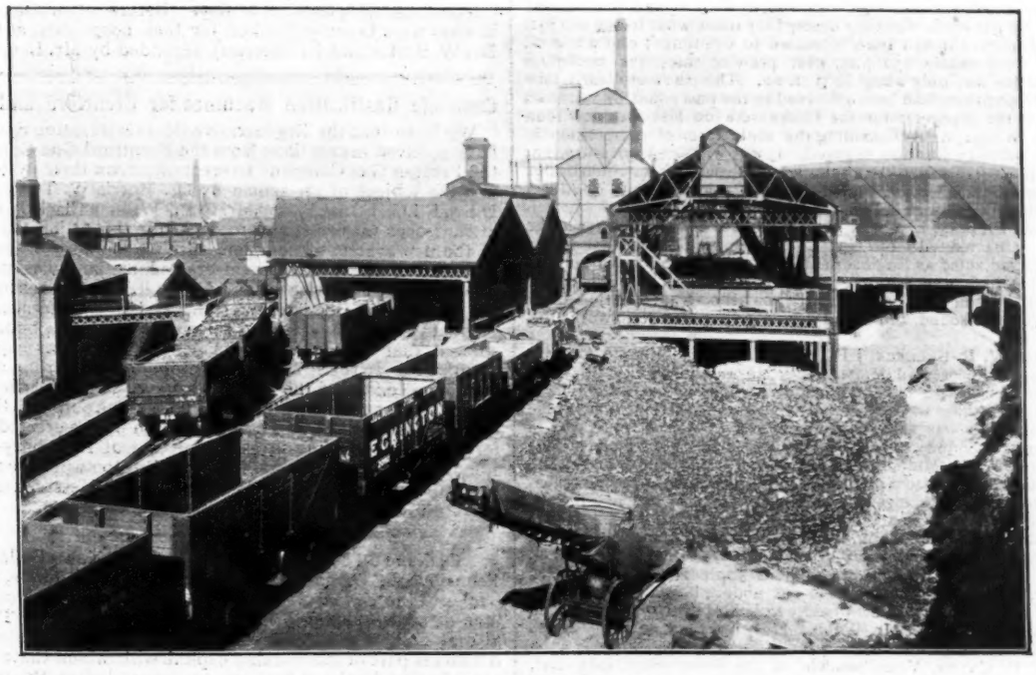
LOOKING UP THE GAS-WORKS YARD FROM THE MAIN GATEWAY.

other boxes are of the water-luted pattern. The naphthalene washer was made on the works. The station meter is by Braddock, and has a capacity of 60,000 c.ft. per hour. There are two town-gas holders. Each has a capacity of approximately 430,000 c.ft. One is spiral guided, and the other column guided. There is also a relief holder having a capacity of 225,000 c.ft. The power house contains two 50-B.H.P. National gas-engines direct coupled to 30 KW. "E.C.C." dynamos generating direct current at 220 volts, and one 150-B.H.P. "Ricardo" engine (6-cylinder vertical type, adapted for town gas) direct coupled to a 100-KW. "G.E.C." dynamo generating direct current at 220 volts. In the booster house are two Donkin machines. Each is driven by a 6-H.P. Veritys motor, and has a capacity of 60,000 c.ft. per hour. There are two Donkin compressors having a capacity of 4000 c.ft. per hour at a pressure of 6 lbs. per sq. in. The two 3-H.P. gas-engines in this house can be made to drive either the boosters or the compressors. The boiler house contains two 24 ft. by 8 ft. diameter Lancashire boilers fitted with Wilton's furnace blowers; the feed water being heated by the exhauster engine waste steam. There is a sulphate of ammonia plant capable of producing 2 tons per day, and dehydrated tar is produced in a Wilton plant capable of dealing with 100 gallons of crude tar per hour.

LUNCHEON.

After the inspection, the party, numbering 75, adjourned to luncheon at the Town Hall, at the invitation of the Chairman and members of the Stourbridge Corporation Gas Committee. Alderman FIDDIAN presided; and he was supported by the Mayor of Stourbridge (Ald. Lieut.-Col. A. H. Moody, C.B.E.), members of the Committee (Ald. W. R. Selleck, Ald. W. Waugh and Councillors F. Barnes, J. Poole, and C. F. Leeson), Messrs. W. E. Caton (Oxford), P. N. Langford (Coventry), and J. Paterson, and the Town Clerk (Mr. J. D. Hanward). The Loyal Toast having been cordially honoured, at the call of the CHAIRMAN,

Mr. JAMES PATERSON, M.A., submitted "The Town of Stourbridge." He remarked that he had undertaken the toast with great pleasure, for he felt it was one which would appeal to all gas engineers, and especially to those in the Midlands. Being a gas engineer himself, he knew that he had their sympathy in the toast. Stourbridge was a border town. On the one side was the beautiful county of Worcester; on the other, what was termed the "Black Country"—one of England's most important industrial centres. If the town of Stourbridge were approached from the west, the delightful scenery engendered appreciation. If approached from the east, then one experienced the relief of leaving behind the smoke and grime. In either case one felt that



VIEW TOWARDS THE GATES.

Stourbridge was an excellent place. The town was particularly well-thought-of by gas engineers, for the chief industry was that of fireclay. To him, Stourbridge brought back the earliest echoes of his childhood. He could truthfully say that he had been born in a gas-works; and one of his earliest memories was his desire to visit Stourbridge, where the world-famous refractories were manufactured. Stourbridge must indeed be proud of such an excellent industry. But it was well-known also for the production of glass, of chains and cables, of chamois leather and parchment, and was associated with a vast number of other industries. He could say, therefore, that those assembled paid honour to the town and offered their good wishes for future prosperity and extended amenities; and the Association, with warm affection and kindly feelings, coupled with the toast his Worship the Mayor.

The MAYOR, in reply to the toast, said there were two topics beloved of music-hall performers. One was a holiday visit to a gas-works; the other was the speech of the mayor. Consequently, his remarks would not be lengthy. They had paid a visit to the gas-works of their Borough, and on behalf of the Corporation he had great pleasure in welcoming them there. Already they had had placed at their disposal descriptive pamphlets dealing with Stourbridge generally and the gas-works in particular; and he would not take-up time by re-iterating those details. He thought that the members of the Association, whether in charge of company or municipally owned gas undertakings, would agree that in Stourbridge they had a works worthy of the best interests of the gas profession. This was primarily due to Mr. Webb, their excellent Manager, and his admirable staff. He must say, of course, that however efficient Mr. Webb might be, and however capable his staff, little could be done without the solid backing of a good Gas Committee. Further, a good committee must have the support of the corporation, if results of real value were to accrue. The Gas Committee of Stourbridge was a good Committee, and Alderman Fiddian, who had been associated with it for eighteen years, had an intimate knowledge of—and also, he believed, a family interest in—the gas industry. The Corporation of Stourbridge could claim to be a live one. They had always enjoyed the benefit of men with ideas and imagination. Stourbridge, which could be termed the residential quarter of the Black Country, besides being famous for its wool, glass, and firebrick, also had its traditions; and there were many houses of considerable age and historic association. He thanked them, on behalf of the Stourbridge Corporation, for the invitation which they had extended to him that day.

Mr. HUBERT POOLEY, M.Inst.C.E. (of Leicester), in submitting "The Stourbridge Corporation Gas Department," said that the toast which had been entrusted to him was perhaps the most important to which they were called to do honour that day. They all knew and respected Mr. Webb, the Engineer of the undertaking, not only for his great ability, but also for his upright character, and for the way in which they knew he carried out the duties of his office; but it had not been the privilege of all of them to visit the works which were so much indebted to him, until this morning. The difficulties through which Mr. Webb and his Committee had passed had not been light; and the works in themselves bore testimony to the skill which had been displayed in bringing them up to their present state of high efficiency. The gas undertaking over which these gentlemen presided had had a remarkable history. It was established in 1835, and was acquired by the Local Authority in 1892 for the sum of about £100,000, which must have worked out at about £1200 per million c.ft. sold, and was a bargain at the price to the community. The then Engineer and Manager was the late Mr. William North, whose memory was cherished by many of those now present. From the time of the transfer to the present date, the finances of the undertaking had been so carefully handled that the outstanding debt was now rather less than £350 per million c.ft. sold. Since the purchase, the population of the area supplied with gas had nearly doubled, but the consumers were now seven times what they were at that time. While the tonnage of coal used was double what it had been at the transfer, the gas made was very nearly four times what it was in 1892, and the gross profit had been increased to five times; and while all expenses were nearly 150 p.ct. over pre-war rates, the maximum charge for gas was only about 40 p.ct. up. This showed clearly how well the Department had been governed in the past; and he ventured to say that the prospects for the future were no less rosy now than they were in 1892, notwithstanding the acute form of competition in which the industry was now engaged. It was with great pleasure that he asked them to drink to the continued prosperity of the Stourbridge Gas Department; and he coupled with the toast the name of Alderman Fiddian, the Chairman.

Alderman FIDDIAN, in a brief reply, said that for eighteen years he had been connected with the Gas Committee, and during that period Mr. Webb had acted as Engineer and Manager. His appointment to this position had been a stroke of good fortune. Throughout, Mr. Webb had never misled the Committee; on all occasions his judgment had proved to be sound, and it had been a great pleasure to work with him.

Alderman W. R. SELLECK, J.P., submitted "The Midland Association of Gas Engineers and Managers." He mentioned that he was a member of the Board of Commissioners when, 32 years ago, it was proposed to purchase the gas-works. How well he remembered the trepidation which was felt at the time, and how excellent it was to regard the tremendous advance which had since been made! The area covered by the Midland Association was of vast importance, and the Association had done a great deal to bring about increased efficiency in the gas undertakings in their area. Their record of progress proved the wisdom of circulating ideas for the common good. In face of keen electrical competition, bodies like the Midland Association and the British Commercial Gas Association were of the highest value. He could not refrain from expressing his appreciation of the work which Mr. Webb had done for the gas undertaking at Stourbridge. They had been fortunate in his predecessor, Mr. North, and they had been equally fortunate in Mr. Webb. He asked them to drink to the success and continued usefulness of the Midland Association.

Mr. W. E. CATON, Vice-President of the Association, said that, owing to the President's accepting in March last the position of Chief Engineer to the City of Rio de Janeiro Tramway, Light, and Power Company, it left their Association in rather a quandary as to where they should hold their annual meeting. It was, therefore, a very happy thought of Mr. Webb to suggest that the Association should visit Stourbridge this year, and a still happier one when the Gas Committee decided to invite the Association to lunch with them. They had had an opportunity of looking over the Stourbridge Gas-Works, which reflected very great credit upon the Engineer and Manager—a gentleman held in high esteem by all members of the gas profession, and especially by members of the Midland Association. It was a custom among gas engineers, if they had anything good, to hand their information or experience on to brother engineers. This was beneficial to all concerned, and especially to gas undertakings. The Midland Association to-day could claim to have among its members some of the most prominent engineers in the gas profession. The incoming President of the Institution of Gas Engineers (Mr. J. Ferguson Bell, of Derby) was a leading member of their Association, and they had other members whom they hoped would soon follow him in this position—the highest honour that could be accorded to any member of their industry. He desired to thank the Gas Committee, the Corporation of Stourbridge, and the esteemed Engineer for their kind hospitality.

Mr. POOLEY thought they should take this opportunity of doing honour to Mr. Webb. He had a fine character; and, after all, character was everything. Their visit to the works during the morning had once more proved to them his great ability.

Mr. WEBB said that this was a day to which he had looked forward for a long time. He felt glad that at last the Association had been able to visit the works. Many things had been said about his services to the Corporation. He merely tried to do his best for the town. He had been fortunate in the Gas Committee and the Council, and had always felt that behind him was real solid backing. The time he had spent at Stourbridge had been one of happiness.

BUSINESS MEETING.

After the luncheon a short business meeting was held, when the SECRETARY (Mr. T. Thornton, of Rowley Regis) mentioned that several members had written regretting their inability to attend the meeting. The only other matter to bring before the Association was an application for membership. This was from Mr. Joseph Poulson, of Oldbury.

A DRIVE IN THE COUNTRY.

Motor coaches were in waiting to convey the party through a portion of the beautiful country surrounding Stourbridge. The weather was all that could be desired; in fact, no better day could have been chosen for giving the visitors a favourable impression of the charming scenery on the outskirts of the town. The trees were wearing the fresh green of spring, and the atmosphere was clear, so that the vast expanses of Worcester could be seen to the best advantage. The route led through Wollaston, Stourton, Enville, Kinver, and then back again to Stourbridge on the Kidderminster Road. It was a delightful drive, full of interest. Shortly after leaving the Town Hall a strange tramway was seen. This, the Kinver Light Railway, is by no means an orthodox track. For a long distance it runs along a grassy footpath, and then, as if obeying some whim, it turns into the meadows, and is lost among the trees. Enville is a most picturesque country village. The houses are charming, and practically every garden was a blaze of colour; and the road was flanked by a wealth of lilac trees and laburnum.

TEA.

On return to the Town Hall, the party were entertained to tea by the Mayor and Mayoress—a pleasing finale to a thoroughly interesting and pleasurable day. Before separating, host and hostess were heartily thanked for their hospitality, at the call of Mr. W. S. Morland (Gloucester), seconded by Mr. Langford.

Complete Gasification Machines for Brentford and Preston.

We learn that the Regenerative Coal Gasification System, Ltd., have received instructions from the Brentford Gas Company and the Preston Gas Company to erect plants on their system, which was the subject of an article by Dr. Morris W. Travers, F.R.S., D.Sc., F.I.C., F.Inst.P., and Mr. Frank William Clark, M.I.Mech.E., in our issues for Oct. 3 and 10, 1923. In that article the principles of the new system of complete gasification were described, and attention directed to the plant erected at the Aylesbury Works, as well as to the results obtained from it. In the second part of the contribution, the theory of the system was discussed. The plant at Aylesbury was rated at 300,000 c.ft. per 24 hours. A test showed that the output of gas per ton of coal as supplied was 47,500 c.ft. In round figures the output of gas per ton of dry coal was 49,000 c.ft., and the calorific value of 96 p.ct. of the gas was 370 B.Th.U. and of 4 p.ct. 500 B.Th.U. The output in therms per ton was therefore 184. The plant which will be erected at Brentford will have a rating in excess of that at Aylesbury—namely, 1,000,000 c.ft. per 24 hours. That at Preston will have a rating of 500,000 c.ft. per 24 hours. We congratulate Messrs. Travers and Clark on their success in obtaining these contracts.

Coal and Oil Storage.—According to the News Bulletin of the Pennsylvania Public Service Information Committee, gas companies of the United States constantly have in stock one million tons of coal, to be sure of a thirty days' supply. They have also 2½ million gallons of oil in stock, for the same assurance. All this is part of the working capital with which the companies provide a credit ahead for their customers before the companies themselves earn anything at all.

MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.

VISIT TO ELLAND.

EVENTS proved that there was the most complete justification for the pleasure with which the members of the Institution had evidently looked forward to the 198th quarterly meeting, arranged to take place at Elland last Friday. The members, who were accompanied by the President (Mr. G. S. Frith, J.P., of Runcorn), reached the picturesque town from different directions, but the main body were met at Halifax Railway Station and conveyed in motor brakes to the works of the Elland-cum-Greetland Gas Company, where, by the kindness of the Chairman and Directors, they were privileged to inspect the new installation of Dempster-Toogood vertical retorts. Thereafter the party, to the number of about 120, were the guests at luncheon of the Chairman and Directors of Messrs. Robert Dempster and Sons, Ltd.; and in the afternoon, at Messrs. Dempsters' Rose Mount Iron-Works, the various processes of gas-plant manufacture were viewed. From start to finish everything went with that perfect smoothness which one associates with good engineering, and, with the kindliest of hosts and so much of interest to see, the day's proceedings will long be remembered by those who took part in them.

Waiting to receive them at the gas-works were Mr. W. E. Dyson (Chairman), Mr. J. W. H. Fox (Vice-Chairman), and other Directors of the Elland-cum-Greetland Gas Company, together with Mr. J. Bridge (the Engineer and General Manager), and Mr. R. H. Porter (the Secretary). The members were received in the Board room, on the walls of which were noticed a number of portraits of former Chairmen and officials—including an old friend of many of those present—the late Mr. Robert Porter, who was Engineer and General Manager from March, 1889, to March, 1921. Here Mr. Dyson extended a hearty welcome to all, and expressed the pleasure that he felt at seeing so large an attendance.

THE ELLAND GAS-WORKS.

The briefest glance at the works revealed several facts. The first of these was their unique position on a piece of land separating a river from a canal, and in close proximity to a main railway line. This situation, while doubtless possessing its advantages, has the serious drawback that it does not permit of the most economical lay-out of gas-manufacturing plant. However, much reconstruction work has been carried out during the last two years, and everywhere the best possible would appear to have been made of the position. Another thing which immediately struck one was the extreme cleanliness and orderliness observed everywhere about the works. Mr. Bridge believes, and quite rightly, that a man is only able to do the best work under the best conditions; and on this theory he acts. Yet a third thing by which the visitors were at once impressed was the beautiful flower garden, with its mass of blooms—wallflowers, azaleas, and white lilac—right on the works, furnishing evidence of the manner in which beauty and utility can go hand in hand.

Mr. Bridge, under whose guidance the members began their tour of inspection, though he succeeded Mr. Porter at Elland only about three years ago, has long been well known in the district, and has many old friends in the Institution, to the Council of which he has been elected. He was Hon. Secretary of the Manchester and District Junior Gas Association for six years, and has been President of that organization. Five years were spent by him at Leigh (Lancs.), where he was trained under Mr. James Gibson, now of Mansfield. Then followed ten years with Mr. H. Kendrick, at Stretford, and three years with Mr. W. J. Smith, B.Sc., at Bolton—in both cases as chief assistant. Mr. Bridge took up his duties at Elland towards the end of May, 1921, and gas men will not need to be reminded that this was a very awkward time, for the great coal strike had started in the previous month. What coal they had at Elland was in the bunkers; but this troublous period was successfully got through.

As already remarked, Mr. Bridge has already carried out much reconstructional work at Elland, and has also busied himself greatly with the distribution department. The demand for gas cookers and boilers is keen; and altogether there has been an increase in the sale of gas since Dec. 31 last of 12½ p.ct. as compared with the corresponding period of the previous year. A maintenance scheme is to be introduced, as Mr. Bridge and his Directors realize that it is not sufficient to make good gas and put it into the holders, or even to send it through the mains; the suppliers must see that it is consumed through the most economical and efficient apparatus, and that this apparatus is maintained in a satisfactory working condition—in other words, they must make sure that the best possible service to the consumer is given. Elland is fortunate in that it is the home of varied industries, no one of which dominates the others, and when trade is bad in one branch it may be good in another. There is, of course, the important engineering business of Messrs. Robert Dempster and Sons, which gives employment to no fewer than 800 workmen and an office staff of over 90, and there are the cotton and woollen industries, while all around firebrick manufacturing flourishes.

The following particulars of the Company and the works are taken from a brochure, excellently produced and illustrated, which was distributed among the visitors.

PROGRESS OF THE CONCERN.

The Elland-cum-Greetland Gas Company was established in 1837; and for a number of years the undertaking was let on a lease. The results, however, were unsatisfactory; and in 1855 the Company rightly undertook their responsibilities, deciding to conduct the business of the undertaking themselves, and appointed Mr. Robert Dempster as Manager. Unfortunately the records of the Company's work prior to 1861 appear to have been destroyed; but it is known that the price of gas at the time of Mr. Robert Dempster's appointment was 7s. 6d. per 1000 c.ft. In 1861, the price of gas had been reduced to 4s. 7d. per 1000 c.ft.; and the sales amounted to only 7½ million c.ft. per annum.

The latest statistics for the twelve months ended Dec. 31, 1923, are as follows:

Gas sold	632,359 therms.
Number of consumers	6,674
Number of ordinary meters	4,607
Number of prepayment meters	2,067
Number of cookers	2,045
Number of wash-boilers	2,947
Number of gas-engines	85
Mileage of mains	51

DESCRIPTION OF THE WORKS.

The works are situated on the banks of the Calder and Hebble Navigation Company's Canal, alongside the River Calder, and also adjacent to the London, Midland, and Scottish Railway Company's main line from Manchester to York. Despite these considerations, the site on which the works has been erected does not lend itself to the most economical lay-out of gas-producing plant; and as additions have been made from time to time, the site has now become very congested, so that further renewals and extensions of plant cannot be carried out in the most satisfactory manner. The choice of the site was unfortunate. A considerable expansion of the business would necessitate a new site being chosen; but, meanwhile, the best is being made of that at disposal.

Much reconstruction work has been carried out during the last two years; but there still remains a considerable amount to be done.

COAL AND RETORT-HOUSE PLANT.

Though the railway is adjacent, it is now impossible to receive rail-borne coal direct into the works; and consequently the greater portions of the coal supplies are received in canal barges, which, at the moment, are discharged by an endless chain-bucket elevator. This plant is to be superseded during the coming summer by the more expeditious method of handling coal with the telpher and grab. The telpher will discharge the coal into a bunker, from which it will be conveyed by existing band conveyors into No. 1 or No. 2 coal-stores, or to the coal-breaker; thence by a gravity-bucket conveyor to the bunkers situated over the vertical retorts.

The gas-producing plant consisted of six beds of Drake's inclined retorts erected in 1901; a 500,000 c.ft. per diem installation of "Dempster-Toogood" continuous vertical retorts, erected in 1915 by Messrs. Robert Dempster & Sons, Ltd., and two Tully gasification plants erected at the commencement of 1921. One of the gasification plants has been disposed of, and the other moved to another site, where it may be made use of at some future date.

In 1923 Messrs. Robert Dempster & Sons erected a second 500,000 c.ft. unit of continuous vertical retorts, replacing the inclined retort installation. The two units of vertical retorts are provided with separate foul mains and retort-house governors, and are connected together by platforms at the various stage-levels.

OTHER PLANT.

The condensing plant consists of a 24-in. steel main running through the inclined retort-house to a battery of six annular atmospheric condensers. The plant is not capable of dealing with the volume of gas at the temperatures prevailing; and as it is situated so as to catch the sun's rays from before noon until sunset, alterations and additions will have to be carried out at any early date.

The exhausters consist of one four-blade Waller machine, and one four-blade Bryan-Donkin; the latter having been installed in 1923. Both exhausters are of 40,000 c.ft. per hour capacity, and are governed by Bryan-Donkin hydraulic steam-regulators.

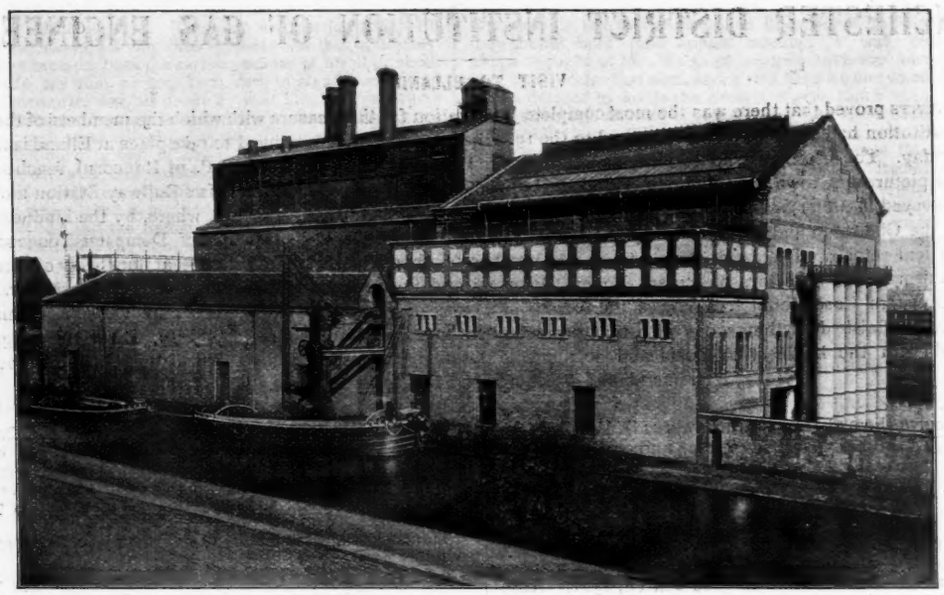
The boilers comprise two of the Lancashire type—one 28 ft. by 7 ft. 6 in. diameter, and one 24 ft. by 7 ft. 3 in. diameter; the latter having been installed in 1922.

There are two tower scrubbers, 44 ft. high by 9 ft. diameter, filled with boards, and a rotary scrubber-washer of 1 million c.ft. per diem capacity.

The purifiers consist of six boxes, 20 ft. square by 4 ft. 6 in. deep, of the old water-lute pattern.

The station meter is of the Braddock type, and 60,000 c.ft. per hour capacity.

As to gasholders, No. 1 was formerly a two-lift one; but in 1921 it had to be converted into a single lift holder, owing to the complete deterioration of the second lift, and now has a capacity of 64,000 c.ft. No. 2 holder has a capacity of 128,000 c.ft., and No. 3, of 850,000 c.ft.



COAL RECEIVING SIDE OF THE ELLAND GAS-WORKS.

Showing the Dempster verticals, condensers, and tar and liquor tank.

Regarding the governors, these are of the Braddock type—one 12 in. and the other 24 in.

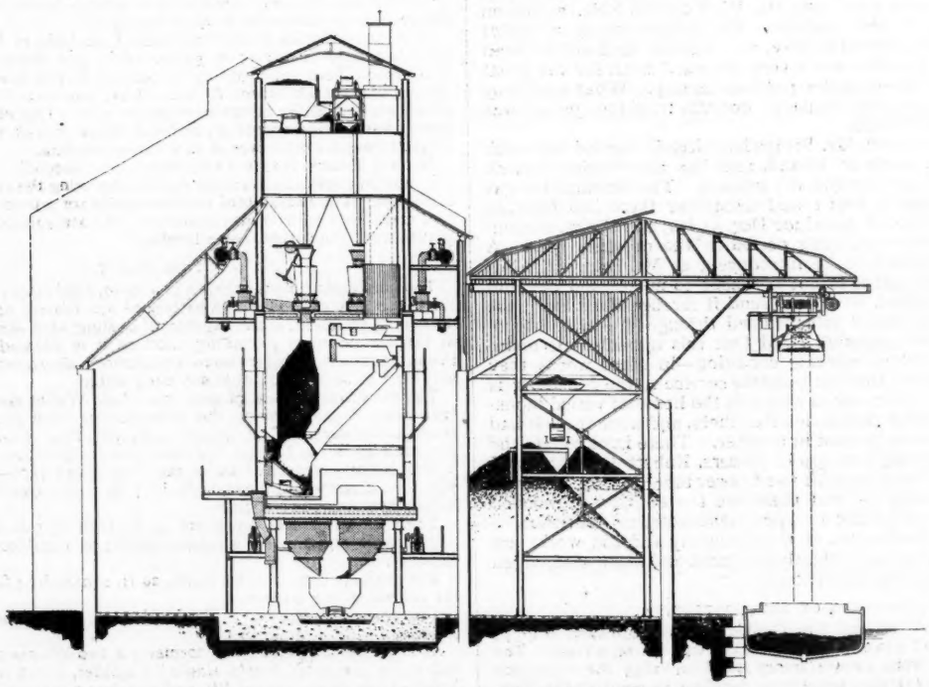
DISTRIBUTION.

The district of supply is characteristic of the West Riding of Yorkshire; and being of a scattered nature, does not lend itself to economical working. The area supplied is about 13 sq.m. The mileage of mains is extensive—reaching no less a figure than 51. The consumption of gas per mile of main is low, but the consumption per consumer is more satisfactory; and as a result of the business done during the last twelve months in the installation of gas-fires, cookers, and wash-boilers, the consumption this year already shows a decided improvement. During the coming summer, a maintenance scheme is to be inaugurated; and it is certain this will prove beneficial to both consumer and the Company.

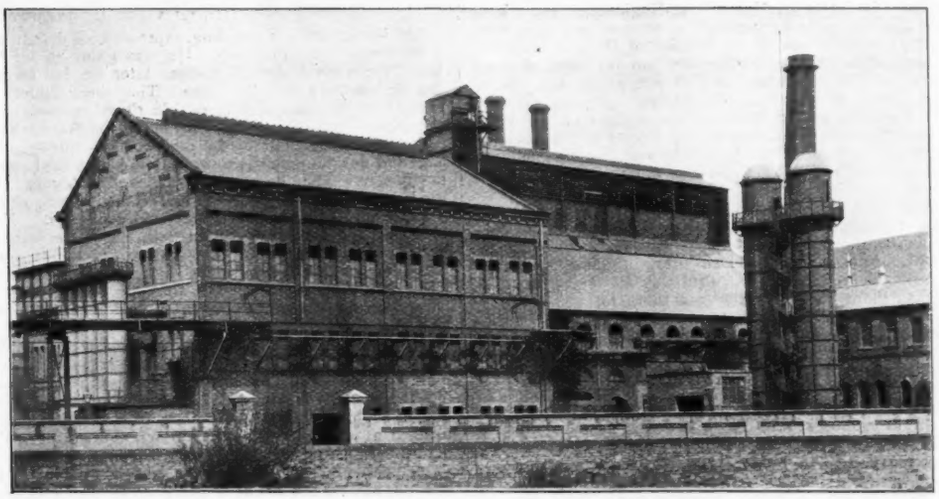
"DEMPSTER-TOOGOOD" CONTINUOUS VERTICALS.

Most of the time at disposal on the works was spent in a careful inspection of the "Dempster-Toogood" steamed continuous vertical retorts. Mr. J. W. Broadhead, Managing Director of Messrs. Robert Dempster and Sons, accompanied the party; and the details of the plant were fully explained by Mr. H. J. Toogood and his assistant Mr. W. Hanson. This installation comprises two 500,000 c.ft. sets, each complete with its own foul main, retort-house governor, and blow-off valve, yet inter-connected at every level by platforms, so that while the advantages of staffing a large unit are retained to the full, it is possible to let a bench down completely cold for overhaul and repairs. This method of design limits the expansion strains. The two sets were erected at different times. In the issue of the "JOURNAL" for June 19, 1917, we gave an extended description, with several illustrations, of the first section; the second section was erected last year, replacing an inclined retort installation.

The Company adopted the therm system as from January, 1922, so that they have already had two-and-a-half years' experience of it. The declared value is 450 B.Th.U., and as the make of gas is round about 18,000 c.ft. from the various coals carbonized, an output of over 80 therms per ton is maintained. Much attention was paid to the porous insulating bricks used by the contractors for the outside of the combustion chambers. Holes were drilled in the brickwork, which enabled the advantages of this porous material to be understood. It was found that the hand could be comfortably placed on the surface of the brickwork, whereas 2 in. from the face the temperature was 189° C., or 376° Fahr., and 6 in. in it was 368° C., or 694° Fahr. Some points made special appeal to one engineer, and some to another; but we must be content here (after saying that all seemed pleased with what they saw) by quoting the particulars of the plant which were included in the brochure already alluded to.



SECOND HALF-MILLION INSTALLATION OF DEMPSTER-TOOGOOD VERTICALS—1923-24.



COKE DELIVERY SIDE OF THE WORKS.

Showing the horizontal house converted for Dempster-Toogood v erticals, and Dempster tower scrubbers.

UNIFYING COAL CARBONIZATION ON THE "DEMPSTER-TOOGOOD" SYSTEM.

The truism that "Profits are made or marred in the retort-house" has ever been kept in the forefront of the minds of the Company when they have had to consider extensions to the carbonizing plant. For, as is evidenced by the retort-house buildings, practically all types of carbonizing plant which have in their time been considered as the most efficient, have found adoption. Forty years ago, where the vertical retorts now stand, there was a hand-charged horizontal retort-bench—in fact, the old foundations were reinforced to take the verticals. Then twenty-three years ago an inclined retort-house and bench was constructed. Eight years ago—*i.e.*, during the early years of the war—the first 500,000 c.ft. unit of continuous verticals was built. Three-and-a-half years ago, the aftermath of war, with all its attendant chaos of proportionate money values, saw the installation of two Tully complete-gasification plants.

UNIFICATION OF CARBONIZING PLANT.

The year 1922 and the introduction of the sale of gas by the therm, with the gradual stabilization of money values, settled the type of carbonizing plant. The worn-out inclined retorts were closed down, the Tully installation was removed to the end of the retort-house (as a stand-by plant), and the verticals were extended by adding a 500,000 c.ft. installation on the "Dempster-Toogood" system.

As originally installed in 1915-16, the first 500,000 c.ft. unit was built in series with the inclined retort-bench, and axially in line with the gravity-bucket conveyor; so that, simply by extending the strands of the conveyor, all the existing coal-stores and coal-handling plant from barge to hopper were utilized efficiently and well. The new extension is in exact alignment; so that the same simple and further extension of the conveyor suffices to bring into harmony the working of all existing coal plant from barge to hopper, and coke plant from retort to yard *viâ* the hoist. A point of interest to practical carbonizers will be that the vertical installation consists of two 500,000 c.ft. sets, each complete with its own foul main, retort-house governor, and blow-off valve, yet all interconnected at every level by platforms; so that, while the whole advantages of staffing a large unit are retained to the full, the merit is secured of being able to let a bench down completely cold for overhaul and repairs. The comfort of the men is also increased; and the strains on the brickwork reduced, to the ultimate advantage of the works.

EXPEDITIOUS AND ECONOMIC DISCHARGE OF COAL BARGES.

Coal is received by 60-ton canal barges. The method of unloading, which was adopted in 1901, has been much admired. However, with the advance of time, increase of wages, reduced working hours, and the necessity of cutting the idle or unloading time of the barges to the minimum, a Dempster's electric grab and telpherage are being installed.

A FEW GENERAL DETAILS AS TO THE "DEMPSTER-TOOGOOD" SYSTEM.

The modern "Dempster-Toogood" system of steamed continuous vertical retorts has been thoroughly developed in respect of detail. The bunkerage is equal to 48 hours', or a week-end, capacity. The hoppers not only store coal, but coke over every furnace, and all retorts, so that the retorts can the more readily be filled with coke after scurfing. The valve for coal and coke is gas-tight. It is rotatable on a vertical axis, and is of sufficiently large dimensions, is self-cleaning, and admits coal or coke *ad lib*. The coal is fed on the centre of the upper axis, whence by natural selection the nuts roll to the corners of the retorts; the smalls remaining in the centre, which feature facilitates continuity of working.

The retorts are built-up from grooved and tongued silicious bricks, forming a retort 60 in. by 20 in. at the bottom, 40 in. by 8 in. at the top, and 23 ft. 6 in. high. The bricks are 4½ in. on joint faces, but thinned to 3½ in. thick for heat transmission. Each retort is independently heated, so that its temperatures can be controlled exactly to suit the working of its charge; and in this feature lie simplification and safety of working.

Symmetry of heating is the keynote of the setting. The producer gases are ignited at one level, some 5 ft. from the top of the retort, on each side of each retort, and burn vertically downwards to the bottom. Afterwards the products commingle round the extreme top of the retort, whereby the following beneficial features ensue: (*a*) Every descending horizontal cross-section of the charge is heated to the same extent or depth on both sides; thus the burning-off of the coal is symmetrical, to the advantage of descent on an even keel, and hence better working. (*b*) The coldest incoming coal meets the coolest outgoing products. (*c*) The most highly heated refractories are below the reach of the stoker's bars, and away from the raw and damp coal, and yet are sufficiently near to the top of the retort to obviate the superimposed weight of the setting, and can in this position be reset without disturbing the setting proper. The sensible heat of the outgoing coke is utilized to pre-heat the primary and secondary air, and also form water-gas with the incoming steam.

The outward taper of the retort, though at the maximum at the top of the retort, where the coal is swelling, is reduced towards the bottom; nevertheless each descending horizontal cross-section of the charge descends into ever larger cross-sectional areas of the retort till finally the maximum cross-section rests on the moving coke-extractor mechanism—thus any bridging of coke is prevented. Four retorts are grouped to be heated with one producer, and each producer has its own independent chimney; so that atmospheric disturbances are largely obviated, and one bed cannot interfere with its neighbour.

The coke-extractor mechanism consists of a smooth inclined tray, which supports the coke at the angle of repose. On receding, it permits some coke to roll down the slope; on advancing, it carries the contained coke away from the retort, allowing the charge to descend. The extractor, with its two-fold motion, operates with certainty and without breakage of coke. The extracted coke accumulates in cast-iron hoppers or receptacles beneath each retort; whence it is periodically removed by truck three times per shift—*i.e.*, each 2 hours 40 min.

THE "ELLAND" PRODUCER.

Originally the settings were fitted with stepped grates; but the war-time coal had rendered the stoker's work on the fires so arduous that in the year 1921, in conjunction with the present gas engineer, an attempt was made to overcome clinker difficulties. The outcome was the "Elland" screen-bar-grate, which has been so successful during the three years that spear bars are unnecessary, and the arduous work of clinkering has been wholly obviated, to the benefit of the men, and with reduced wear on furnace linings and settings generally. In brief, the grate is a steeply-inclined bar-screen, which, owing to all the furnace linings being perpendicular, actually carries 100 p.ct. of the incandescent coke, so that each cob of coke as it descends must reach the screen, down which it creeps by gravity. Realizing that with producers clinker forms in the primary zone of combustion, it will be seen that the primary zones are always creeping down a screen, through which agglomeration of coke is prevented, and the fusible dust gravitates continuously and automatically out of the primary zone of open formation of incandescent coke. Since no less than 70 of these bar-grates have been successfully installed in various gas-works by the contractors, once again it is proved true that "Nothing succeeds like success."

LUNCHEON.

The inspection over, the motors conveyed the visitors to the Elland Constitutional Club, where they were the guests at luncheon of the Chairman and Directors of Messrs. Robert Dempster & Sons. Mr. J. W. BROADHEAD was in the chair, and there were with him at the top table Mr. G. S. Frith (the President of the Institution), Mr. F. H. Robinson (Senior Vice-President), Mr. W. Rogerson (Secretary), Mr. C. S. Shapley (Leeds), Messrs. W. E. Dyson, J. W. H. Fox, G. F. Casson, and J. E. Chadwick (Directors of the Gas Company), and Mr. James Bridge (the Engineer).

During luncheon the guests had an opportunity of inspecting a photograph of Messrs. Robert Dempster & Sons' stand at the British Empire Exhibition.

The toast of "The King" having been enthusiastically honoured,

Mr. DYSON (Chairman of the Elland Gas Company) proposed

"The Manchester District Institution of Gas Engineers," remarking that it was a live Institution, and comprised a body of very able men, who were devoting their abilities to the success of the gas industry, for which they and the Institution stood. Mr. Samuel Tagg, of Preston, the President of the Institution of Gas Engineers, was one of their members. It was in 1897 that Mr. Bridge's predecessor, the late Mr. Robert Porter, occupied the presidential chair of the Manchester Institution. Now they had elected Mr. Bridge to the Council, and the Directors were in hopes that at some future time the members would find him worthy to fill the highest position which it was in their power to bestow. [Applause.] A very long time had elapsed since the Institution were last at Elland, and he hoped it would not be so long before they came again. On looking at the brochure distributed at the works, they would notice that Mr. Robert Dempster, the founder of the firm of Messrs. Dempster, originally came to Elland as Manager of the gas-works. Probably in taking up the manufacture of gas plant Mr. Dempster did more for the industry than he would have accomplished had he continued as a gas-works manager; but had the Manchester Institution been in existence then, he was sure he would have been an active member of it. He hoped they had had an interesting visit that morning, and he felt sure they would later on have an equally interesting one to the works of Messrs. Dempster & Sons—might they live long and flourish!

The PRESIDENT, in response, said he regarded it as a very great honour to represent an Institution of this description, which he considered the most important of its kind in England. It had a membership roll of over 200, and they were all live members. The area covered by their membership was a very extensive one. The membership of the Institution represented undertakings of the capital value of £40,000,000, whereas, according to the last "Gas Undertakings Returns," the capital employed by gas undertakings in Great Britain was £160,000,000. It was a pleasure to them all to see that Elland was keeping so well up to date. They had a very good Gas Manager in Mr. Bridge. The members of the Institution had known Mr. Bridge for some years, and they did look forward to the time when he would become their President. If the best results were wanted, it was necessary to pay the best salaries to obtain them. Within the past few weeks he had visited Elland, and had been astounded at the magnitude of Messrs. Dempster's works. The members were in for a treat that afternoon.

DETAILS OF A BIG BUSINESS.

Mr. BROADHEAD, responding, expressed his delight at seeing so large a gathering there that day. He was going to let the Rose Mount Iron-Works speak for themselves later on, but he might say at once that he was very proud of them. They were modern and replete with every kind of machinery to enable them to carry out work expeditiously and economically. They employed 800 workmen, and in addition there was a staff in the office of 91—mostly draughtsmen, engaged in designing and setting out the details of gas plant and other machinery. They had work in hand, not only for this country, but for South Africa, India, and British Columbia, and in these cases, besides supplying the plant, they were erecting it. Now that silica retorts had come into use, segmentals had come into their own again, and it might interest the members to know that the firm at present had contracts for over 2½ miles of silica segmental retorts. Another matter he might mention was that Mr. W. M. Carr and Mr. H. J. Toogood, the firm's chief inventor, had recently brought out a variable method of heating retorts by producer gas from the coke fire in the usual furnace; by producer gas made by an outside producer from either coke or coke breeze; or by coal gas—whichever might at the moment pay best, taking into consideration the price of coal and coke and the cost of gas into the holder—without interfering with the process of gas manufacture. Any one of these three methods might be utilized at will, without letting down the setting. When he got his "JOURNAL," the first thing he looked at was the advertisements. Some people did not study the advertisements in the technical papers enough, and so might not be prepared for the magnitude and variety of the operations which they would be witnessing that afternoon. He was very much obliged to Mr. Shapley for the kind way in which he proposed this toast. In conclusion, he was sending round the room a photograph of the firm's exhibit at Wembley, and he hoped that all of them when in London would visit the stand.

THE ROSE MOUNT IRON-WORKS OF MESSRS. ROBERT DEMPSTER & SONS, LTD.

Leaving the Constitutional Club, the visitors proceeded by motor to the Rose Mount Iron-Works, where they enjoyed fully as great a treat as speakers at the luncheon had promised them. Taken in hand by nine guides, they had ample opportunity of seeing work of widely varying character in progress, and on a scale which surprised some of those who had not been there before.

ROSE MOUNT IRON-WORKS—THE OFFICES, STORES, AND FITTING SHOP.

Mr. HAROLD DAVIES proposed "The Elland-cum-Greetland Gas Company," remarking that the late Mr. Robert Porter had been a personal friend of his, and he was very sorry to lose him. The Elland Gas Undertaking was an example to others. The works were well equipped and were under the control of a very able body of Directors, who had the personal interest of their Engineer at heart, not only in his work, but also in every other respect. The Company had always been a prosperous one, and had taken the best advantage of their opportunities. They deserved success, and he thought that under the able management of Mr. Bridge they would continue to enjoy it. Mr. Bridge was fortunate in being at Elland, and the Directors were fortunate in having him. The Institution wished the Company all possible good fortune.

Mr. J. W. H. FOX (Vice-Chairman of the Gas Company), returning thanks, said they at Elland, he thought, had been a pioneer Company as regards progress—he was referring, of course, to undertakings having a similar turnover. He had seen every phase of the alterations in the Company. Very many years ago he was elected to the Board as a junior member of it; to-day he was the "father" of as good a body of men as one could wish to be associated with as a fellow-Director. They had had a most respected and admired Manager in the late Mr. Robert Porter, and were in great difficulties on his death, which occurred at a most unfortunate time. However, after deep deliberation they appointed Mr. Bridge; and for having done so they had no regrets. The township of Elland ought to be very thankful to have an undertaking like the Elland Gas Company, who had never attempted to profiteer in connection with either gas or coke. Elland should also be thankful at having in its midst a firm like that of Messrs. Robert Dempster & Sons, under the able management of their Chairman, Mr. Broadhead.

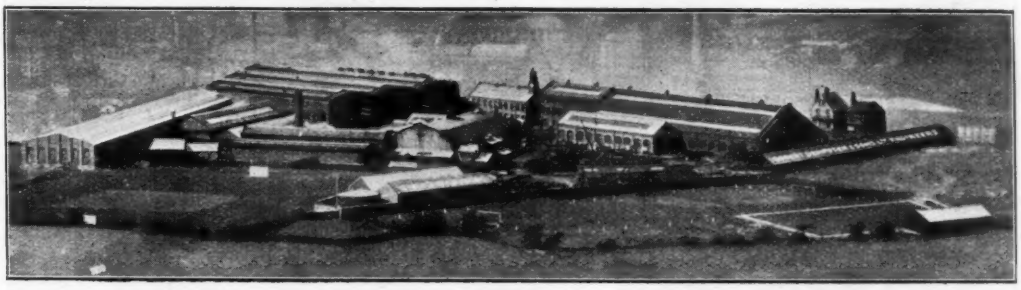
Mr. C. S. SHAPLEY, proposing "Messrs. Robert Dempster & Sons, Ltd.," remarked that he had not known the Rose Mount Iron-Works so long as some of those present, but he had had very pleasant dealings with the firm, and the work they had turned out for him had been quite satisfactory. Mr. Broadhead showed himself to be a thorough business man. The works (which he had visited on many occasions, and the growth of which he had watched) were a lasting credit to their Chairman.

HISTORY AND PROGRESS.

This well-known business enterprise is carried on by one of the largest and most important firms specializing in the heavy-section requirements of the gas industry; and the inspection of their works inspired the visiting gas engineers with unusual interest. It is fitting to learn that the late Robert Dempster, who founded the firm in 1855, was at one time Gas Engineer at the Elland Gas-Works. The old-established firm—now in its 70th year—is full of vitality, enterprise, and growth. Examples of their early work, of historic value, were seen in two gas-meters made by Mr. Robert Dempster in 1850; and acting in pride of place as a name-plate on the offices is an old-fashioned lime-luted retort lid made by Dempster's in 1858.

The present Company, with Mr. J. W. Broadhead as Managing Director, date from 1892. From that date, they have made steady progress—the result of keen insight into the needs and requirements of the gas engineering industry, the adoption of the most modern machinery and means of manufacture, and the employment of a highly-trained technical staff, to meet the insistent demands of the gas industry for improved apparatus and labour-saving machinery of every description during the past 30 years. The Managing Director has had associated with him quite half-a-dozen of his chief officers throughout his period of 32 years; and as the majority of important positions held under him are entrusted to long-service men, it will be seen that the great development of the firm has come chiefly from within—which is a most pleasing feature.

The Rose Mount Iron-Works are picturesquely situated in the arms of the Ainley Hills (a spur of the Pennine Range), and the Company own practically the whole of the level land nestling so pleasantly in the fold of the hills—a total of about 28 acres. The



BIRD'S-EYE VIEW OF THE ROSE MOUNT IRON-WORKS.

works themselves occupy 12 acres. Immediately behind the works, at the foot of the green hills, is the sports ground, containing football and cricket fields, a pavilion, a well-appointed bowling green, and a tennis court for the staff, totalling to over 4 acres. The remaining 12 acres of arable and grazing land have been purchased with the hopeful prospect that the gas industry will still further develop, and in confidence that this old-established firm will require extensions in consequence. Fireclay works are seen on the hill-tops. It is a great fireclay and silica district; many of the most refractory bricks used in gas-works being manufactured in the neighbourhood of Dempster's works. The latter are convenient of access either *via* Elland Station, L.M. & S. Railway, on the main line from Manchester to York, or by trams which pass the gate, 3½ miles from either Huddersfield or Halifax railway stations.

The Offices.

The suite of offices built in 1903, seen in the frontage photograph of the works, were first shown to the visitors. They are well-appointed and most comfortably furnished to accommodate the technical and commercial staffs, which at the present time total 91. All departments are connected with one another and with the works departments by private telephones, and each office department with the private branch exchange for outside communication.

Many features were pointed out; and a fine array of descriptive and working models proved a source of keen interest—particularly in the vertical retort department, where the history of the development of gas-works carbonization by machinery was readily followed by models. There was also an absorbing model of a new stoking machine which the firm are putting on the market. A patent pusher, having a flexible or jointed rack driven by 18-in. pinions, after a lengthy and very satisfactory trial has been incorporated in this new machine. The feature lies in substituting for the projector charger on the same axis as the pusher a flexible or jointed worm conveyor, housed between the cheeks of the pusher ram. The machine discharges a retort by pushing in the orthodox manner; but on the return stroke of the pusher the worm is rotated by an electric motor, so that the coal carried into the retort by the pushing stroke is augmented. Any desired weight of coal can be fed into the retort by the screw conveyor, even to the complete filling of the cross-section. The aim of the design is to give any weight of charge, from any coal, with the minimum of dust and flame when in operation.

The Shops.

The pattern shop is furnished with modern machinery to expedite wood-working; but what proved most interesting was a colossal store for standard patterns, indexed and safeguarded in three independent sections. Almost every want of any gas-works can be speedily provided for from stock patterns.

The foundry, with its semi-circular glazed station-type roof, is one of the most airy and light in Yorkshire. It is served by a 20-ton and a 10-ton overhead travelling crane. Many examples of casting for gas-works were in evidence.

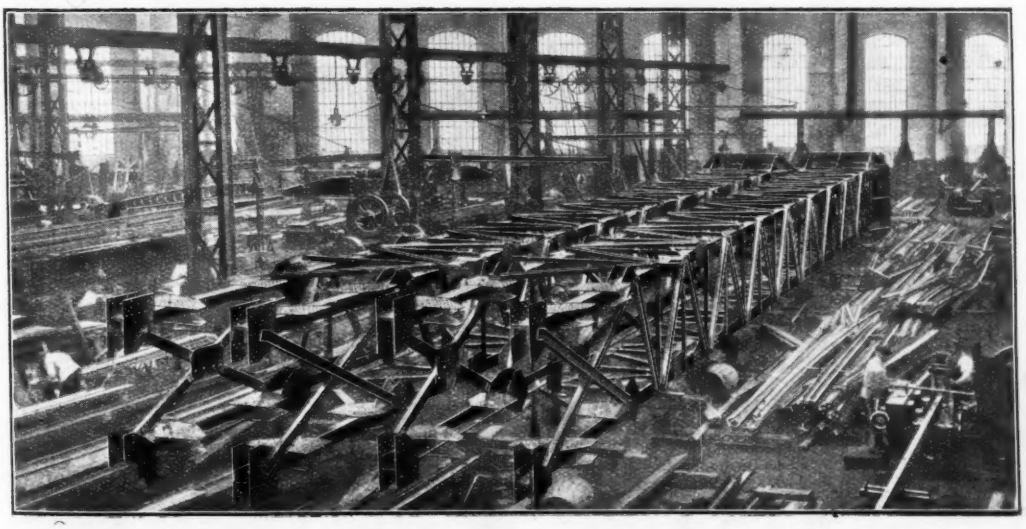
The fitting shop was rebuilt in 1912, and is modelled on modern lines. The centre bay for heavy tools is served by two high-speed overhead electric cranes, 10-ton and 5-ton respectively. The side bays accommodate the smithy, the fitters' benches, and light turret lathes. Every modern machine renowned for accuracy and capacity for work is represented. Power is generated by gas-engine, and the line shafts turn on ball bearings. A number of machines are electrically driven. Examples of work were everywhere in evidence—among them being a huge electric jib crane for the South African State Railways at Colenso, an electric telpher and 8-ton grab for Yallourn Power Station, in Australia, designed to handle a gross load of 8 tons, coal breakers, wagon tippers, parts of screening plants, capstans, vertical-retort parts, horizontal-retort mouthpieces, reversing and Weck's valves for purifiers, and many telpher machines, both mono-rail and bottom-flange.

The planing shop, wherein were seen valve bodies, purifier plates, tank plates, &c., is furnished with machines having self-contained electric motors, whereby a quick return stroke is obtained and efficiency enhanced.

The Constructional Department.

This department, built in 1914, is surely the last word in skilful application of foresight to economize time and effort in the production of constructional steelwork. Space forbids lengthy description of this magnificent building; suffice it to say that the eaves are 40 ft. high and the roof of steel, Belfast type, glazed as much as possible so that the shop is particularly light and spacious. It is served by no less than seven high-speed electric travelling cranes, varying from 10 tons to 5 tons capacity, all of 62 ft. 6 in. span.

Machine tools too numerous to mention are on every hand. Practically all holes are drilled by groups of high-speed electric machines. Punching, shearing, bending, straightening, and plate-scarfing machines are everywhere. Oxy-acetylene and quasi-arc cutting and welding plants are at hand. For gasholder construction, most interesting machines are shown—one machine stretching sheets to perfect truth of flatness, whereby hammer marks and bulges are totally obviated; another punching up to 120 holes at one stroke in gasholder sheets, thus ensuring perfect alignment of



PART OF THE CONSTRUCTIONAL SHOP.

CONSTRUCTIONAL DEPARTMENT—THE ERECTING BAY.

the thousands of rivets. For the heat-treatment of metal, plate and bar furnaces of huge dimensions, heated by producer gas, were seen; the gas being generated from gas-works coke.

Examples of work, too numerous to detail, were in evidence—such as Warren girders for telpher plants, many types of bunker and conveyor framework, several samples of welded work, steel framing for retort-houses, bench bracings, and considerable numbers of various appurtenances for retort benches; many parts of gasholders too, in which department Messrs. Robert Dempster are at present particularly busy, including seven spiral holders fitted with the recently introduced "Elland" patent ball carriage. The large stock of heavy-section rails, the rough stampings for the carriages, and the finished carriages were inspected with much interest.

The power is by gas-engine, and the shafting runs on ball-bearings. However, in so large a shop as this, the machines become scattered, so that many are driven direct by self-contained electric motors.

Power and Other Details.

The firm's electric transformer station is of interest. Here, 10,000-volt alternating current, supplied by the Yorkshire Power Company, is converted into 480-volt direct current for the works supply (this being the previous standard voltage before the Yorkshire Company's new supply was available), or into any pressure to enable the whole of the electrically driven apparatus manufactured at Elland to be tested and worked previous to delivery. Pneumatic power is conveyed by pipes from two compressors to all shops for portable tools, such as pneumatic hammers, chipping, caulking, and drilling machines. A water-gas plant and spiral gasholder are situated near the foundry. Water gas from gas-works coke is made for power purposes, though town gas is also connected up to each gas-engine throughout the works.

The assemblage or lay-out yards are spacious in extent and conveniently placed to serve the shops; and in these a great variety of gas-works plant was seen, such as purifiers, atmospheric and water condensers, steel mains, roof principals, &c.

ONE END OF THE CENTRAL BAY OF THE FITTING SHOP.

Huge trammels serve to ensure the perfect circularity of the rings of gasholder curbs, cups, and dips. Scores of structures for tanks have erection marks plainly painted on to facilitate and ensure perfect erection. The yards are served by travelling steam jib-cranes, on standard gauge tracks; and in convenient positions are several tool stores, brick stores, and open erection sheds with handy tools and cranes.

Hydraulic power (1800 lbs. to the sq. in.) is available in several shops for pressing of shapes, bending, &c., and for the testing of valves, tanks, &c. The template shop may be said to be a huge drawing board for full-size chalk drawings, from which templates are made and marked, thus ensuring exactitude of workmanship. In the riveting shop, foul mains, condenser tubes, and many other kinds of constructional work for gas-works were moving with perfect ease on the roller-bearing trolleys for the rivets to be closed by hydraulic power; long crab-like arms entering the tubes to hold up the rivet head. The very efficient coke-fired heaters were also a noticeable feature.

The stores—a three-storey building erected in 1914 near the entrance to the works, for checking merchandise in and out—is well fitted with innumerable dockets for the ready display of the multitudinous detail requirements for the many and varied current contracts. Incidentally it was mentioned that, in horizontal retorting, over 2½ miles of retorts, with all appurtenances of bench mountings, retort-houses, &c., were in hand, also numerous telpher and other coal-handling plants. Even in these days of depression, the works, large as they are, are forced to resort to overtime to fulfil their contracts within the time limits.

The visitors were shown photographs of complete gas-works contracted for and built by Messrs. Robert Dempster; and from what the visit displays, there is no doubt whatever that the firm lacks nothing either in enterprise or ability, or the confidence born of experience, to carry out any contract which the future of the gas industry may demand.

THE MODELS, &C.

Mention has been made of the fine array of descriptive and working models, which proved so great an attraction—particularly in the vertical retort department, and in connection with a new stoking machine which the firm are putting on the market. To go a little more into detail, it may be said that the models included a complete setting on the "Dempster-Toogood" system of continuous vertical retorts, built up in layers of wood ⅜ in. thick, each layer representing a 6-in. course of brickwork; and as each flue was coloured to represent producer gas, waste heat, secondary air, or primary air, every flue could be distinctly followed through the setting. A glass model some 3 ft. high showed the charge being continuously fed into the retort, expanding into the various cross-sections, and being extracted by the "Dempster-Toogood" tray extractor gear at the bottom. One could see the physical condition of the charge within the retort, and imagine the chemical action of the rising water gas. Furthermore, the model being in glass and backed by wooden flues, the arrangement of the setting and the disposition of the heats applied to the retort were clearly demonstrated. Another model had for its object to demonstrate, by means of delicate scales, that the weight of the charge did not pass downwards on to the mechanism. With a 4 oz. charge in a taper retort, the model only gave a down-thrust of ½ oz. on the scales—thus indicating that the mechanism can be placed immediately under the charge in a vertical retort. A quarter-scale wooden model was exhibited of the built-up round-cornered retort, showing exactly the breaking of joints and bonding of the special shapes of which the retorts are built up. In the whole structure there is not one solitary joint between retort and flue other than bed joints, thereby ensuring gas-tight retorts. There was a very neat brass model of the "Elland" non-clinkering screen-bar grate (alluded to in the description of the plant at the gas-works), which obviates the formation of clinker. With this, the coke in the primary stage of combustion is caused to creep gradually down the screen, whereby the dust is screened away from the coke before it can form or be fluxed into clinker.

With regard to horizontal work, there was a complete lay-out of the 95 p.ct. silica retort, showing the "X.Y.Z." model which Messrs. Dempsters have advertised and are making, and of which, as Mr. Broadhead stated at the luncheon, they have at the present time 2½ miles on order—of course, with all appurtenances. A wooden model of a partially built horizontal retort setting illustrated the improved vertical tubular regenerator, with ready means not only for cleaning the large tubes containing the waste heat, but for repairing them. By means of a brass model and an aluminium demonstration model, attention was drawn to the firm's completely automatic catch for horizontal retort lids. The opening and closing of the door operates the catch.

These are only some of Messrs. Dempster's specialities which the visitors had an opportunity of studying for themselves, and for which opportunity the firm were, before the works were left, heartily thanked, together with Mr. Broadhead and the members of the staff who had shown them round.

Tea at the Constitutional Club brought a pleasant day to a close.

WALES AND MONMOUTHSHIRE DISTRICT INSTITUTION OF GAS ENGINEERS AND MANAGERS.

GENERAL MEETING AT DOWLAIS.

NOTHING was wanting to make a complete success of the spring meeting of the Institution, which was held last Wednesday at Dowlais, under the Presidency of Mr. W. CLARK JACKSON, of Neath. In the morning the works of the local Gas Company were thrown open for inspection; at the business meeting there was read and fully discussed a paper on a subject which is at the present time of very great importance alike to large and small undertakings; and in the afternoon gas men experienced a welcome change in an inspection of an immense and thoroughly up-to-date steel works. This, interspersed with generous hospitality, made up a programme which was carried through by a large attendance of members in glorious summer weather.

THE DOWLAIS GAS AND COKE COMPANY.

On the way up from Merthyr to Dowlais, the visitors inspected this compact little works, with much modern plant well selected to meet requirements, and everything so arranged as to take the fullest possible advantage of the varying levels. They were received by the Dowlais Gas Company's Manager, Mr. J. H. Jones, whose father was for many years in charge of the works, and was one of the original members of the Wales Institution. It was explained by Mr. Jones that the Company were formed in 1856 to supply Dowlais and district with gas. Dowlais was, up to that period, supplied by the Merthyr Tydfil Gas Company; and as Mr. J. E. Kenshole remarked in his address to the Institution at Merthyr Tydfil in 1911, the supply was very unsatisfactory, because whenever the stock of gas was low the supply to Dowlais was shut off. This caused great dissatisfaction among the Dowlais consumers, who took steps to consider ways and means to have a supply of their own; and a Company was formed for the purpose.

The mains, services, and meters were taken over by arrangement from the Merthyr Tydfil Gas Company in the autumn of 1856; and the records of the Company show considerable activity in the direction of providing an adequate supply of gas to the town, increasing the number of consumers, and the general extension of the Company's business. The Dowlais Iron Company (now Messrs. Guest, Keen, & Nettlefolds, Ltd.) were for many years customers to the extent of 70 p.ct. of the Company's sales; but they have gradually, by adopting other methods—such as producing and using electricity for power and light—reduced their gas requirements to about 4 p.ct. of the Gas Company's sales. Yet the Gas Company, by the wisdom and foresight of their Directorate and management in adopting up-to-date methods, have well established themselves in the town and district, and gas sales have steadily increased year by year. In 1905 the Company applied to Parliament for statutory powers; and the Dowlais Gas Act received the Royal Assent in the following year, incorporating and conferring certain powers upon the Company. The standard price of gas was fixed at 3s. 6d. per 1000 c.ft., with a 5 p.ct. dividend, varying according to the price charged. Under the Gas Regulation Act, the standard price was fixed by the Board of Trade at 1s. 5d. per therm. The Company declared a calorific value of 500 B.Th.U., and to-day supply gas at 1s. 2d. per therm. The authorized capital of the Company is £52,750, of which £42,750 has been issued.

The works are situated about a mile from the railway station, and therefore have not the advantage of rail transit in and out. The coal and other haulage work is done by a 5-ton Clayton steam wagon, and the haulage of coke and all light work by a 1-ton Ford motor. The carbonizing plant consists of eight sets of Gibbons regenerator settings, each of six horizontal retorts 10 ft. long; the capacity being 25 tons per 24 hours with hand-stoking. There is a convenient coal store under the same roof, with a capacity of 400 tons, and a spacious cellar beneath the charging floor.

The condensing plant is of Gibbons' horizontal atmospheric type, in three sections, with provision for a fourth. There are two combined steam engines and exhausters (Waller's three-blade type), with a capacity of 10,000 and 15,000 c.ft. of gas per hour respectively. The washer is of Messrs. C. & W. Walker's make, with a capacity of 250,000 c.ft. of gas a day, and there is a Cockey scrubber 7 ft. in diameter by 20 ft. high. The four purifiers are of the dry-seal type, by Messrs. Cockey, with a Sadler-

Cockey reversing centre valve. They are elevated boxes, 20 ft. by 12 ft. by 5 ft., with two covers to each box: the purifying material being hoisted by means of a Waygood-Otis lift, worked mechanically. In addition, there is a 10-ft. square water-lute check purifier.

The station meter, by Messrs. Parkinson and W. & B. Cowan, has a capacity of 15,000 c.ft. an hour. There are three gas-holders of a capacity of 22,000, 30,000, and 90,000 c.ft. respectively, the largest having provision for an additional lift. The present combined storage is equal to approximately 70 p.ct. of the maximum day's output. A 10-in. governor is by Messrs. W. & B. Cowan. The mains on the works are 10-in. and 12-in. in diameter, the trunk main to the town being 10 in.; and the town and district are now well supplied with gas.

THE BUSINESS MEETING.

The meeting was held in the Guest Memorial Hall, in High Street, which had been kindly placed at the disposal of the Institution.

MINUTES OF THE LAST MEETING.

The HON. SECRETARY (Mr. Octavius Thomas, of Pentre) read the minutes of the last meeting, which was held at Neath, and they were confirmed.

NEW MEMBERS.

On the proposition of Mr. W. V. WATSON (Ebbw Vale), seconded by Mr. F. HILL (Usk), Mr. Arthur Edward Pask, Manager and Secretary to the Caldicott and District Gas Light and Coke Company, Ltd., was elected a member of the Institution, and Mr. Terence Henderson Madden, late of Westminster School, Cardiff, was admitted as a student.

AN HONORARY MEMBER.

Mr. H. D. MADDEN (Cardiff) said he had great pleasure in proposing that Mr. E. H. Swain be elected an honorary member of the Institution. Mr. Swain was for many years an active member—in fact, almost from the start of the Institution—and though to-day he was not actually on the gas manufacturing side of the industry, he occupied an even more important position, being with the Gas Referees as their engineering advisor. In electing him an honorary member, they would honour not only Mr. Swain but themselves.

Mr. J. STEPHENSON (Ferndale) regarded it as a privilege to second the resolution, particularly as he happened to have known Mr. Swain probably for a longer time than anyone else present. He started working as a pupil under Mr. Swain 24 years ago; and from his personal experience of him, he knew that he was always ready to help anybody if he possibly could.

The HON. SECRETARY read the following letter which he had received from Mr. J. H. Canning, of Newport:

> I notice with very great pleasure that at the meeting of the Institution it is proposed to elect Mr. E. H. Swain as an honorary member. I regret very much that I cannot be present in person to support this proposition, but I should very much like to say how worthy Mr. Swain is of the honour which the Institution propose to confer upon him.
>
> During his residence in the district, we all learned to appreciate his sound technical knowledge, his kindly and unassuming disposition, and the other excellent qualities of heart and mind which won our friendship and esteem. He has filled the Presidential Chair of the Institution with marked dignity and ability, and although his present duties have deprived us of his genial presence, his heart is still with us, for he continues to take the very greatest interest in everything that appertains to our district. I should like therefore to say how heartily I support the conferring of this honour upon Mr. Swain.
>
> J. H. CANNING.

Personally, he (Mr. Thomas) most heartily supported the proposal.

The PRESIDENT remarked that all those of them who had the honour of knowing Mr. Swain realized the value of the services which he had rendered, and was still rendering, to the industry. Recently Mr. Swain had been of considerable assistance to him.

The resolution was carried with acclamation.

ANNUAL REPORT.

The HON. SECRETARY then read the nineteenth annual report of the Council, which covered the past year. This stated that during 1923 six members and two students joined, three members died, and four resigned, leaving the number at the end of the year at 75 members and 7 students. The receipts for the year amounted to £41 12s., and the payments to £22 14s. 5d., also the sum of £59 0s. 6d. was invested in the purchase of £100 of 2½ p.ct. Consols—leaving, with the balance brought forward from the previous year, the sum of £38 16s. 4d. in the hands of the Treasurer. As the "GAS JOURNAL" had decided to publish the "Reports of District Associations," subscriptions would be increased to £1 for members and 9s. 6d. for students.

Mr. B. J. BELL (Cardiff) moved the adoption of the report and accounts, both of which, he said, revealed a flourishing state of affairs.

Mr. G. MAYNE (Penrhiwceiber) seconded the resolution, which was agreed to.

NEW OFFICE-BEARERS.

The following were elected office-bearers for the ensuing year:

President.—Mr. W. H. Johns, of Swansea.

Vice-Presidents.—Messrs. H. D. Madden, of Cardiff, and H. Barker, of Llanelly.

New Members of Council.—Messrs. H. D. Hazell, of Newport; A. T. Kyle, of Abergavenny; and T. B. Pearson, of Pontypool.

Hon. Treasurer.—Mr. J. H. Canning, O.B.E., of Newport.

Hon. Secretary.—Mr. Octavius Thomas, of Pentre.

Hon. Auditors.—Messrs. A. E. Williams, of Cardiff, and J. H. Jones, of Dowlais.

THE NEW PRESIDENT.

The PRESIDENT, proposing the election of Mr. W. H. Johns to the chair, said that that gentleman came to them a few years ago, and very soon, by his genial manner, won his way into their hearts. As they got to know him, they all realized his sterling qualities. They recognized his great technical ability, and hoped to have an opportunity of inspecting the new works which he was putting down for the Swansea Gas Company at Morriston.

Mr. MADDEN had great pleasure in seconding this election to the Presidency. Mr. Johns was one of his oldest friends in the industry. He knew Mr. Johns when he was a student, and they had formed a friendship then which had never been broken.

AN INVITATION TO SWANSEA.

Mr. W. H. JOHNS (Swansea), returning thanks for his election, said he hoped to be able, with the assistance of the members, to give the Institution a successful year, and nothing would be wanting on his part to make it so. His Directors had asked him to invite the members to Swansea next October; and he would propose that this be their next meeting place. They would then be able to see some of the new work carried out there. He would look forward with great pleasure to the visit, which it was hoped to be able to combine with the opening ceremony of the new works.

The HON. SECRETARY seconded the proposal to hold the autumn meeting in Swansea, and it was carried.

The PRESIDENT, on behalf of the members, thanked Mr. Johns and his Directors for their kind invitation.

THE VICE-PRESIDENTS.

Mr. J. E. KENSHOLE (Merthyr), who proposed the two Vice-Presidents, said Mr. Madden had been with them now a considerable time, and had already occupied the Presidential Chair, with great advantage to the Institution. In his hands their interests would be perfectly safe. As to Mr. Barker, they regarded him as an old South Wales gas manager. At one time he was at Pontypridd, and left there to go to Buxton, but since then he had come to Llanelly. Efforts had previously been made to get him to take office, and they were all pleased that he had now consented to do so.

Mr. J. MOGFORD (Briton Ferry) seconded, and expressed the feeling of the members that the names put forward were a guarantee that all was well with the Institution.

Mr. MADDEN, in acknowledgment, said it was true he had been President before, and this made it all the greater honour to be elected Vice-President again.

BENEVOLENT FUND OF THE INSTITUTION.

On the proposition of Mr. JOHNS, seconded by Mr. J. H. JONES (Dowlais), it was decided to contribute five guineas to the Benevolent Fund of the Institution of Gas Engineers.

THE MANUFACTURE AND NEUTRALIZATION OF SULPHATE OF AMMONIA.

Mr. C. BATEMAN, F.C.S., of Cardiff, then read a paper on this subject, which was illustrated by a number of lantern slides.

This, with a report of the discussion, is unavoidably held over till next week's issue.

Mr. E. H. CLARRY thereafter proposed a hearty vote of thanks to Mr. Bateman for his paper, which was an excellent one. There was a tremendous amount of detail work involved in the preparation of a contribution of this character. He was the better able to judge of the great value of the paper, because he himself knew the plant referred to, and had worked on it in the same line of experiment.

Mr. F. C. WHITE (Blaenavon) seconded the vote.

Proposed by the PRESIDENT, and seconded by Mr. E. ABLETT (Swansea), a vote of thanks was also passed to the Chairman and Directors of the Dowlais Gas and Coke Company for providing a room for the meeting and for their hospitality, and to Messrs. Guest, Keen, and Nettlefolds, Ltd., for permitting the visit to their steel works and for their hospitality.

LUNCHEON.

A party of about sixty afterwards sat down to luncheon in the Memorial Hall, as the guests of the Dowlais Gas Company—with Dr. W. W. JONES, J.P. (the Chairman of the Company), presiding. Other Directors present were Messrs. F. R. Ll. Atkins, J. T. Morgans, R. C. Harrison, and George Hicks, with the Manager (Mr. J. H. Jones). Messrs. Guest, Keen, and Nettlefolds were represented by Mr. T. F. Jones (Works Manager), Mr. F. Reed (Local Secretary), Mr. Tudor Davis (Colliery Agent), Mr. E. Truran (Blast Furnace Manager), and Mr. Jenkins (Chief Engineer). Following the Loyal Toast,

The CHAIRMAN said that, on behalf of the Dowlais Gas Company, it gave him great pleasure to welcome the Institution to the town, and he was particularly glad to do so on this occasion, as Mr. Jackson, their President, was very well known to them at Dowlais, through having been engaged for a considerable time at Merthyr. They rejoiced greatly that Mr. Jackson had attained the distinguished position of President of the Institution. There was, perhaps, not a lot to show the members at the Dowlais Gas-Works, but he thought they could, for a small works, lay claim to being on the road of progress; and they intended

to make every effort to remain on this road. The gas industry of this country was a much bigger industry than many people were aware of, for a great amount of capital and a large number of men were engaged in it. He had always felt that the industry did not enjoy the support of the general public to the extent that it should do. In fact, it might be said that they had been exposed to many unfair attacks—some of them quite recently. Nevertheless, the industry was making very great progress, and he was particularly pleased that advance was being made on the scientific side. He did not fear for the results on the commercial side, they could successfully face all the competition they might have to meet, if they had help from the scientific side. The Institution were there as representing the scientific and engineering branch of this great industry, and he felt confident that, if they put forth their efforts wholeheartedly, there was a great future before them all. The big companies, like Cardiff and Swansea, had set an excellent example by encouraging in every possible way technical education in the gas industry, and he hoped more would be done in this direction. He coupled with the toast the names of Mr. Jackson and Mr. Thomas.

The PRESIDENT, in response, declared that the Institution stood for the advancement of the industry generally; they were out for progress. They knew that they belonged to an industry which had a long and successful history, but they felt assured that it had before it a still more prosperous future. At present they were on the verge of happenings which it was hoped would increase the utility of the industry to the public. "Service" was their slogan, and it fitted the industry very happily. So long as there were Institutions such as this, the industry would continue to stand for service, and would give service to the public. It was within the power of even the smallest undertakings to advance the knowledge of the industry by carrying out experiments according to their capacity. Not as a local industry, but as a national industry, they retained scientific men on investigations which had already proved of lasting benefit to the industry, and would, it was hoped, in the future enable them still further to cut their costs of production, so enabling them to supply the public on a cheaper and even a better basis than at the present time.

Mr. THOMAS remarked that, as one of the prime movers in the Institution, he was pleased to think they were making such excellent progress. When he was serving his time at Cardiff, a good many years ago now, the electric light was first introduced there, and Cardiff gas shares went down. Yet what was the position to day? Everywhere they found gas still going ahead.

Mr. MADDEN proposed "The Dowlais Gas Company—Our Hosts." He said that when he came from London to Cardiff about seventeen years ago, the very first friend he made was a coke-oven engineer, who was a Dowlais man, and so he heard from him a good deal of the history of the district, and of the part that the great steel works had taken in its development. He was reminded, also, that about a couple of miles from where they were then seated, the first locomotive was built and run. They would long remember the cordiality of their reception at Dowlais. The President had remarked that the motto of the gas industry was "Service." This could not be too much emphasized. Where would the country be now, had it not been for the service of the gas industry in the great war—which service was given unhesitatingly, and without any bargaining? They had given service in the past, and they were going to give still greater service in the future. To-day no home was complete without a gas-cooker, and in time the same remark would apply to the gas fire. Then there was the vast industrial field, the surface of which as yet had hardly been scratched. As to education, the Institution of Gas Engineers were now seriously taking this matter in hand, in the hope that the industry might secure experts for all departments. Nowadays specialization must be undertaken by everyone; and this new scheme, it was hoped, would prove of invaluable help. He trusted that in the future progress of the industry, the Dowlais Gas Company would take their part.

The CHAIRMAN said it had been a very great pleasure to the Directors of the Gas Company to extend hospitality to the Institution, and to see the members attend in such large numbers.

Mr. JOHNS proposed "Messrs. Guest, Keen, and Nettlefolds," with special reference to the gentlemen connected with the chemical section of the works. The new coke-oven plant which the Company were putting down would be one of the finest in the country—seeing that they were not involved in placing their contracts with any one particular firm, but had been round the country investigating the best scientific arrangements in regard to coke-oven practice; and the installation in course of erection embodied all the latest ideas. It fell to his lot some time ago to be connected with the putting into operation of the only coke-oven installation on a gas works, and it was still giving very good results. Of course, many gas undertakings were now deriving supplies of gas in bulk from coke-ovens.

Mr. REED, in response, said his Company laid claim to having made pig iron for 150 years and more on the same ground. Further, the first steel rail turned out under the Bessemer process was made at Dowlais. The Company had great faith in Dowlais; this was proved by the way in which they were spending money. The new coke-oven plant was the latest thing of the kind in the country. All the facilities of the Company were at the disposal of the Institution that afternoon.

Mr. KENSHOLE proposed the health of Dr. Jones, and to this the CHAIRMAN replied.

THE DOWLAIS STEEL WORKS.

An afternoon of absorbing interest was then spent, under the charge of the gentlemen already named, in the Dowlais Steel Works, which are up-to-date in every respect, though the first blast-furnace was built there as far back as 1758. In 1865 the first steel rails made by the Bessemer process were rolled at these works, which were acquired in 1900 by Messrs. Guest, Keen, and Co., Ltd. The present works, apart from the collieries, which produce steam and bituminous coals, and the limestone quarries, coal washery, and coke-ovens, consist of blast furnaces, Siemens and Bessemer plants, rolling mills, and engineering shops, and a power station for producing current for lighting and power.

The blast-furnace plant comprises four furnaces. The necessary bunkers for storing the materials used in the manufacture of pig iron are situated to the rear of the furnaces. The two furnaces now in blast have all their materials charged mechanically by an inclined electric hoist; the other furnaces are hand filled. There are sixteen hot blast stoves of the Cowper type, with hexagon regenerator linings. The pig-iron beds are served by two 10-ton overhead electric cranes. The pig-iron breaking machine is electrically driven, and is capable of breaking 100 tons per hour. The blowing engines, which are in a house 174 ft. by 50 ft., are three in number, and are of the vertical compound condensing quarter-crank type, with Corliss valve gear for steam and Southwark valve gear for air. There is a battery of twenty-four boilers of the Lancashire type. These are fired by the surplus gas from the furnaces.

The re-melting cupolas are three in number, 6 ft. in diameter, with six tuyeres each, and are capable of re-melting 8 tons per hour each. There are two mixers, each of a capacity of 120 tons, and one of 750 tons capacity; the last-named only being worked at present. The molten metal is conveyed to the mixers from the blast furnaces by means of hot-metal ladles mounted on carriages and drawn by locomotives. The capacity of these ladles is 30 tons and 16 tons. From the mixer the metal is conveyed to the Bessemer plant by means of similar ladles, with a capacity of 20 tons. The mixer is fired by gas from three gas-producers, and is served by an overhead electrical crane which is of no less than 50 tons capacity.

The Bessemer plant comprises two 20 ton converters and one 20-ton centre crane; three cupolas for re-melting the recarburizing materials, such as spiegel, &c.; a hydraulic ingot stripper; drying stoves; and a ganister mill. The average output per day of twelve hours is 450 tons of ingots. The blast for the Bessemer converters is supplied by a steam-driven turbo blower, of a capacity of 30,000 c.ft. of air a minute at a pressure of 24 lbs. per sq.in. There are two 5-ton electric cranes running the whole length of the bay for handling ingots from the Bessemer to the vertical furnaces, and from the latter to the cogging mill. The various engines at the Bessemer plant and rolling mills are supplied with steam from a battery of twenty Lancashire boilers; four Babcock and Wilcox water-tube boilers; and two three-drum type Babcock and Wilcox high-pressure boilers with superheaters, mechanically stoked.

The old coking plant consists of 110 Coppée waste-heat ovens at the Ifor Works, and 114 similar ovens at the old works. The new plant comprises a battery of 30 Otto regenerative bye-product ovens, 38 ft. long by 10 ft. 2 in. high by 21 in. wide at centre, with a total output of 2000 tons of coke a week. The coal for this plant is washed at the old works in a Coppée washery and conveyed by means of trucks to the drainage bunkers at this plant. These are twelve in number, and are of a circular design in reinforced concrete, 20 ft. in diameter, with a total capacity of 3000 tons. From these drainage bunkers the coal is conveyed by means of belts, elevators, and conveyors to the service bunker at the coke-ovens; the capacity of this bunker being 2500 tons. The bye-product plant is laid out to deal with the bye-products from 360 tons of coal an hour, and is so arranged that it can be duplicated, if necessary. This portion of the works consists of a sulphate of ammonia, a crude benzole, and a tar dehydrating plant.

Power is now being supplied to the collieries through an overhead transmission line which is 7½ miles in length, at a working pressure of 6000 to 6600 volts. This line constitutes a ring main round the Company's collieries, and has been built for an ultimate pressure of 33,000 volts. Power is supplied from the power house at the Ifor Works to the steel works by means of underground cables, at a pressure of 6600 volts to the various substations, and is then transformed to give an alternating current pressure of 400 to 440 volts to the small motors, whereas the large motors are coupled direct to the 6600-volt main.

Tea with Messrs. Guest, Keen, and Nettlefolds brought the meeting to a close.

Pacific Coast Gas Association.—A large gathering of gas men assembled at the second sectional meeting of the Pacific Coast Gas Association held in Seattle, Washington, on April 25. The proceedings opened with a business session, at which the Board of Directors met with the Chairmen of the Sections, for a general discussion of activities. Concerning the proposed publishing of the Alliance Testing Code, the decision arrived at was that the Alliance Testing Committee should proceed with its work of preparing a set of standard specifications for gas-appliances and a proper procedure for the testing of such appliances in the laboratories available to the Association. Mr. E. L. Hall brought up the question of affiliation with the American Gas Association. An interesting paper was presented by Mr. George Whitwell on "The Back-Run Process of Water-Gas Operation." As the members had the opportunity of seeing this process in actual operation at Tacoma, the subject had additional interest. Another paper was presented by Mr. Harold S. Babb, Industrial Engineer of the Portland Gas and Coke Company, on "The Commercial Bread Baking Load." Both papers evoked good discussion. Afterwards a dinner was held at the Hotel Washington. An address was given by Mr. Hance Cleland on the "Regulation of Utilities." Following this, Prof. F. J. Laube, of the University of Washington, spoke on "Taxation." On April 26 the members were the guests of the Seattle Lighting Company on a tour of inspection of their gas properties.

NORTH OF ENGLAND GAS MANAGERS' ASSOCIATION—AUXILIARY SECTION MEETING.

The Tenth Auxiliary Half-Yearly Meeting of the North of England Gas Managers' Association was held at the workshops of the Distribution Department of the Newcastle and Gateshead Gas Company, in Market Street, Newcastle, on May 24.

Mr. William Batt, Junr. (the Chairman), presided; and prior to the members inspecting the workshops, he gave the following Address describing the various methods and processes adopted.

THE CHAIRMAN'S ADDRESS.

My first duty is to thank you for having elected me as your Chairman. On behalf of the Newcastle and Gateshead Gas Company, I have pleasure in extending an invitation to the Association to inspect the new premises in Market Street, recently taken over by the distribution department.

Prior to September, 1922, the department was housed in three workshops. The headquarters were in Forth Street, and there were two branch shops—one in Newcastle, the other in Oakwellgate, Gateshead. Forth Street was responsible for all work of a general nature, such as maintenance of incandescent burners, repairs to meters and stoves in workshops, lamp factory, &c., and also all work in connection with ordinary consumers north of the river and in the western portion of our large area of supply. The branch in Newcastle was entirely devoted to fixing, repairs, and complaints on prepayment installations on the north side of the river and the western area. Oakwellgate did all work on the south side of the river, both for ordinary and prepayment consumers, in addition to repairing lamps *in situ*, and mainlaying. For a long period it was felt that the premises in Forth Street were out of date, too small, and not conducive to economical working; and the present building was acquired which, by the centralization, has permitted of better supervision and the gathering of separated stocks under one roof.

It is impossible in this paper to deal with costs effectively, as this would entail more time than is at my disposal; and I feel that you would rather devote the occasion to a description and inspection of the various shops. From the time we have been here, the new methods and systems adopted have justified the change. The department occupies a large fireproof building fronting on to New Market Street, with two sides abutting on to Croft Street and Carliol Street respectively, and is centrally situated for trams and railway stations. The building is a four-storey one with basement; the floor area being approximately 5000 sq. yards. There is an entrance for staff at one side of the building, and one on the opposite side for workmen. Two loading docks are provided, one to the basement and the other on to the ground floor; and goods are transported by means of two electric lifts, of 10 cwt. and 5 cwt. capacity respectively, running from the basement to the roof. In addition, a continuous electric lift for light goods is used during busy periods.

Basement.

This space, except for a boiler-house and blacksmith's hearth, is occupied by heavy and bulk stock. In the boiler-house are two National Radiator Company's coke-fired low-pressure water circulating boilers for heating the building and supplying hot water for the lavatory basins. An incinerator is provided for the disposal of rubbish. The blacksmith's hearth, of the portable type with an electrically driven fan and a $\frac{1}{10}$ H.P. motor, is erected at one corner, where tool repairs and small iron work are carried out. Scrap materials from the various jobs are here collected, sorted, and the recoverable parts abstracted and sent up to the workshop for renovation previous to going into stock.

Ground Floor.

Leaving the basement by means of a wide central staircase the ground floor is reached. This floor is entirely devoted to stores and the handling of same. There is a counter for the quick dispatch of workmen—essential in our particular business, where many men work outside on the district. A portion of the stores is fitted throughout with specially designed sectional-steel bin and rack equipment, somewhat on the "Meccano" principle, made by Messrs. Harvey & Co. This type of equipment is fireproof, light, and strong; it occupies the minimum of space, and is adjustable, both vertically and horizontally, to suit the class of goods. A vertical rack for the stacking of iron pipe is placed in a convenient position to the serving counter previously mentioned. This counter prevents unauthorized persons from entering the stores, and is fitted with steel-mesh sliding screens which are closed and bolted after hours. Under the counter are shelves and nests of drawers containing small and every-day quick stock. At the rear, racks are built for the storage of gas-fires, &c. In this part of the building we have the transport and goods-receiving office close to the principal loading dock. Carts and motors are backed into the building up to a raised platform, so that heavy goods can be wheeled directly on to or off the vehicles; the platform being reached from the stores floor by means of a ramp. The space occupied by this loading platform is not lost, as the supporting timbers have been designed to hold our bulk stock of iron piping. A joiner is employed for general work and repairs, and his workshop is placed in one corner where there is plenty of light, and which has access independent of the stores. From this store all goods are distributed, whether for transport, workmen, or for internal shop use. I have only briefly described the stores; but there are other interesting details relating to it.

First Floor.

This floor comprises workmen's assembly hall, plumbers' shop, and workmen's dining room; also managerial, general, and inspectors' offices, which are convenient to each other and permit of ready intercommunication and supervision. All orders relating to work of any description are received in the general office, from which centre they are distributed to the respective persons dealing with them. The Company's area is divided into eleven districts, each in charge of an inspector, who is responsible for all work carried out on his district, such as the fixing of stoves and appliances, meters and services, &c., and for the attention to complaints. The inspectors allocate a full day's work to each workman, previous to which have been estimated the necessary materials for the job, and the stores are advised so that they can assemble the articles and have them dispatched by transport to their destination, or placed in readiness to hand to the workman with the minimum loss of time. In addition to the district inspectors, we have a mains superintendent and foreman, three street-lighting inspectors, two inspectors of the maintenance of incandescent burners, and one inspector of prepayment installation maintenance, each of whom has a staff of workmen who are dealt with on this floor.

The office from which the mains work is allocated is situated at the north-east corner of the floor, where for your inspection have been placed some of the latest appliances, such as under-pressure main drilling machines, made by Messrs. Pass & Co., pressure recorders, leakage detectors, Chapelow's electrical pipe locator, various types of main stoppers, cutters, and modern tools appertaining to mainlaying.

The street lighting department is also installed here, and working models of distance lighting controllers (both pressure and clockwork) are displayed, along with patterns of the type of burners and lanterns in use in the area. The district inspectors' and the general offices are adjacent, and each inspector has a separate window to deal with his particular workmen. Outside the inspectors' windows is a small assembly space for the workmen, who, on receipt of the day's orders, proceed to the ground floor by way of a short staircase in the centre, calling at the stores counter if necessary, and thence leaving the building on the Croft Street side.

The large assembly hall on the first floor is fitted up with portable benches and lockers combined; each workman being provided with a locker in which to store his kit of tools, &c. He is given a key; but a master key is in charge of the chief storekeeper. On this floor is installed a battery of power-driven pipe cutting and screwing machines. The largest screws from ½-in. to 4-in. and cuts from 2-in. to 4-in. pipes. Another machine screws from ⅛-in. to 2-in., and a third machine cuts up to 2-in. pipes. They are of the latest type and quick in action, and were supplied by Messrs. Joshua Heap & Co., of Ashton-under-Lyne. The cutters sever the pipe without any burring or curtailing of the bore, which would be detrimental to the flow of gas, besides forming a catch point for naphthalene. These machines are in constant use, and worked by experienced machinemen, who, in addition to the cutting and screwing for the workmen, utilize all the short ends of pipe for stock, so that there is little or no pipe scrap. Driving power is obtained from a 5-H.P. electric motor fixed on the floor above, but controlled near the machines and transferred by way of a "Skefco" shaft fixed on the wall, running on ball bearings, and counter shafting on the ceiling. The striking gear for putting the machines in and out of action is attached to each machine, and close to the hand of the operator for instant use. It is unique in its construction for effectiveness and simplicity. Near the machine is a trap-door fitted into the floor, through which long lengths of pipe are handed to and from the stores below. Adjoining the machines and against the walls are racks made from iron pipe, taking up the minimum of floor space, carrying our main stock of new and repaired street lanterns.

Second Floor.

This floor constitutes our cooker and gas-fire renovating department, occupying practically the whole of the area. It is equipped with modern plant and laid out for process work. The cookers and fires brought in from the district are received at the transport dock close to the 10-cwt. lift, and carried direct to the workshop; particulars having been recorded on cards. They are placed on the floor space allocated for them, and proceed through the following processes. The foreman inspects each apparatus; and any not worth repairing is broken up.

Taking the cookers first, these are divided into two types—ones with enamelled outer sides, and the others all-iron outer cases. The former are taken to pieces, the enamel parts separated from the cast, and the slag-wool packing removed. The taps and rails are numbered to correspond with the cooker number. The metal work is transferred to a gas-heated caustic soda tank, and treated for about 1½ hours, according to condition, after which it is taken out and well washed. The enamel plates are treated likewise but only for about 10 or 15 minutes. The iron and enamel parts are passed on to the fitting section for reassembly, and new parts are added as necessary, and the tap rails forwarded to the buffing section. The iron-cased cookers are dealt with in a gas-heated furnace in an entirely different manner, the

only preparation being the removal of the tap rails, which are dealt with as before.

Experiments in burning-off deposits of dirt and grease from cookers were carried out on a small scale; and it was found to be a commercial proposition. Eventually a suitable furnace was designed, and two installations were constructed by the Company's workmen. Difficulties were encountered at the outset, but were successfully overcome by ascertaining the correct temperature and length of time required for heat application. The heat was found to lie between 1050° and 1100° Fahr., and the time necessary to convert the grease deposit into ash 15 to 25 minutes, according to the condition of the cookers. When the cookers are placed in the furnace, the temperature drops immediately to 800° Fahr., but recovers in 7 to 10 minutes. With higher temperatures oxidization is experienced, and below these heats the required result is not obtained. With the all-enamel cookers we found that the heat of the furnace caused the outer plates to buckle, owing to the weight of the hotplate, but the cast-iron cookers with inside enamel linings withstand the heat.

The furnaces are built of brick with firebrick linings, between which and the outer brickwork is a layer of "Nonpareil" heat-resisting bricks, to conserve the heat. The whole is well-stayed and bolted together in an iron frame. The bottom consists of a sliding platform (with wheels running on rails) capable of being drawn out to floor level, so that the cookers may be easily loaded and unloaded outside the furnace. The entrance is closed by means of sliding firebrick doors encased in iron frames. Fixed at each side of the chamber and close to the floor are the gas-burners. They are of the air-blast type fed by low-pressure gas and air at 12 in. pressure from a Keith fan electrically driven from a 2-H.P. motor. Batches of from 6 to 10 small cookers are dealt with at a time, or 60 to 90 per day, with a gas consumption of approximately 800 c.ft. per hour, or about 6000 c.ft. per day. The furnace is operated by two men provided with asbestos gloves and aprons. These men stand the cookers on a side platform area, first having placed the oven door of each on the hotplate while a batch is in the furnace. The contents of the furnace are inspected through a sight hole in the door, and the attendant can see when the grease has received sufficient treatment. Large volumes of smoke, &c., are given off, but are carried away into the open by means of a hood and chimney. The platform with the cookers on is withdrawn, and the door closed to retain the heat. The furnace-men pull the cookers off the platform with special long hooks. The hot cookers are taken to the "brushing" section and allowed to cool; afterwards being thoroughly scraped and brushed with suitable strong wire brushes. The burners and loose parts are taken out and thoroughly cleaned; any broken or worn-out parts going to scrap.

The cookers are then transferred to the fitting department and the hotplates and crown plates taken off. The slag wool packing usually shrinks, and is replenished. If the inner linings are good, the crown-plate is replenished. Special care is taken that no deposit is left in the flue. The hotplate is polished and refixed, the burners are replaced, and missing parts are renewed. In this section the cookers which have been treated in the caustic bath are also reassembled, and parts added when necessary. With some cookers the enamel plates are only bad on one side; and means have been devised for turning the edges of some types and fixing them with the bad side to the packing. The operation costs only a few pence, thus saving many shillings for new enamel parts. Again, the enamel may be worn through, and this is usually at the bottom edge, the remainder being good. When possible these are cut down to suit a smaller cooker. The tap rails in the meantime have been forwarded to the buffing section, fitted up with large and small buffing and grinding machines made by Messrs. W. Canning & Co., and a drilling machine by Messrs. Churchill & Co. These are all power driven by a 5-H.P. motor, and a main shaft with bearings of the "Skefco" make. The exhaust to carry away the dust, &c., when polishing, is fitted with a 1½-H.P. motor and Keith exhaust fan connected to a catch box which is periodically cleaned out. The tap rails having received all necessary repairs and a thorough cleaning, buffing, and re-grinding, are then refixed; identification being obtained by means of the cooker number.

The cookers are next transferred to the space allotted "waiting spray." The spray plant equipment was supplied by the Aerograph Company; and the compressor is connected to a 2-H.P. motor controlled from a switch fitted near the spray operator. The air is compressed to 30 lbs. into a container fitted with an automatic unloading valve to save power, which throws the belt on to the loose pulley when the pressure is raised, and again brings the belt into action when the pressure falls below the standard. From the container a pipe is carried to supply three spray units. In the stove shop are fitted two of these units of hooded chambers constructed of iron framework fitted with glass sides and top. Under the canopy, and at floor level, there is a revolving table 2½ ft. in diameter, on rollers, which supports a large cooker, also movable benches with small revolving tables, suitable for smaller parts, gas-fires, &c. When spraying, it is necessary quickly to carry any vapour away from the men; and each hood has a flue outlet and is coupled to a 34-in. Keith Blackman exhaust fan direct coupled to a 1½-H.P. motor which is controlled by a switch close by. From the outlet of the exhaust fan the vapour is carried into the open air. The pistols or hand appliances for spraying the lacquer or paint are supplied from 2-gallon containers, but are so constructed that, if a small quantity of paint or lacquer is required for any special job, it may be drawn from a cup attached to the pistol.

The cookers, after leaving the fitting section, are sprayed black, grey, or any special colour desired. The time taken is much less than by hand and brush, and a better finish is obtained. After spraying, the cookers are immediately placed in japanning ovens at a temperature of 200° Fahr. for 2 hours, when the lacquer becomes quite hard, and has a good wearing surface. The three japanning ovens were built by Messrs. Aynsley & Sons, and are heated by low-pressure gas from atmospheric bar burners. Each oven is 8 ft. 6 in. long by 6 ft. wide by 5 ft. 6 in high, and is constructed of sheet iron double-cased and packed at the sides and top with slag wool. The double doors are also packed. The flue outlets are placed at the front, fitted with dampers, and carried into one large chamber connected to one of the main flues in the building. On leaving the japanning ovens, the cookers go to the testing section, where every care is taken to see that all parts are in good and proper condition, the burners being regulated and tested thoroughly before being passed as correct. New tins, grids, &c., drawn from stores, which are kept on a rack in the shop, are added to the cookers which, after a final inspection by the foreman, are sent down the lift to the stores.

With the muffle system there are distinct advantages. In many cases it saves taking the cooker wholly to pieces, and, as every process in the work is costed and timed in minutes for each operation, there is a considerable labour saving as against the caustic bath system. In addition, it is much quicker, which enables us to cope with a greater number of cookers. At times we have dealt with over 200 cookers per week; while for the first quarter of this year over 1800 cookers, together with gas-fires, radiators, &c., were renovated in this shop. In regard to gas-fires and radiators, these are taken to pieces, thoroughly cleaned, and parts renewed as required. After reassembly they are sprayed, japanned in the ovens, and finally tested. Broken parts of all cookers and fires, &c., are repaired if the cost warrants it, and no part is scrapped if likely to work in for any other appliance.

There is a shop-clerk's office, and in addition two small rooms occupied by the clock repairers and an electrician respectively. The clock repairers keep in order all the clocks and time recorders of the Company, including clockwork controllers brought in from the street lamps, and the various pressure recorders and other apparatus.

When new cooker tins are supplied to consumers, the old ones are collected as far as possible and accumulated until we have several hundreds. They are then sorted over, and the very bad and perforated ones scrapped, the others being retained for renovation by an electric tinning plant supplied by Messrs. Canning & Co., Birmingham, and installed in a room near the cooker repair shop. The process consists of a hot caustic bath to remove all dirt and grease, the tins being boiled for 20 to 30 minutes. They are afterwards thoroughly scoured and swilled in clean running water in a lead-lined wood trough. The tins are next immersed in a lead-lined pickle bath containing diluted commercial sulphuric acid. After about 20 minutes, oxidation of the iron is removed, and the tins are again well rinsed in clean water, scratch-brushed on a lathe, to produce a bright surface, and after again dipping into clean water, are ready for receiving the tin coating. The tinning vat is of iron, and the solution contained is carefully made-up of various plating salts, and is heated by gas to a constant temperature of 180° Fahr. The vat has five brass rods placed on insulators across the top, and from the two outer and centre rods are hung the twelve pure-grain tin anodes, between which the articles to be plated are suspended from the two other rods.

The current of electricity passed through the bath is at about 5 volts, which is sufficient to deposit on the cooker tins from the tin anodes a good wearing tin surface in about 20 to 25 minutes. The tins after having been in the vat for about ten minutes are taken out, swilled in clean water, scratch-brushed, and again replaced in the vat for 10 to 15 minutes. Again they are washed and scratch-brushed, and rinsed in hot water. After drying in boxwood sawdust they are ready for use. The current supplied to the vat is generated from a low-voltage direct-coupled dynamo to a 2-H.P. motor taking its current from the town supply at 480 volts. On the dynamo supply is fitted a resistance board, also a voltmeter to regulate the current to the vat. The scratch-brush lathe is also driven from the motor.

THIRD FLOOR.

This floor is occupied chiefly by tinsmiths, coppersmiths, and meter repairers, but there are also brass finishers, glaziers, and painters. The caretaker's quarters are also on this floor. The tinsmiths and coppersmiths shop is on the Market Street side of the building, and is well equipped with tools and machinery of the latest design for the various sheet-metal goods dealt with in the manufacture and repair of street lanterns, cylinders, tanks, fluepipe, &c. All work carried out in this shop is paid for at piece rates. Adjoining the tinsmiths shop is a clerk's office and a stock room for meters awaiting repairs. The meter shop and test room take up the rear of the floor, and are well lighted by ventilated skylights fitted into the roof. The meter test room is directly opposite the large lift, and is partitioned off so that the necessary testing temperature, provided by hot-water pipes and radiators fed from the main boiler in the basement, is maintained. In the test room are two pairs of 11 c.ft. holders with benches be-

tween, fixed back to back, and one pair of 5½ c.ft. holders. These holders were removed from the Forth Street premises, and overhauled by our own workmen. Another pair of 5½ c.ft. holders has only recently been installed. All holders are well equipped with testing tables, King's pressure gauges, water gauges, thermometers, &c.; and meters are here tested for the 2-in. registration test (or for correct measurement).

Along the rear wall of the enclosure is a special test apparatus for the 5-in. test (or the passing of unregistered gas to 1-20th of the rated capacity, or 2 c.ft. maximum). The rate of gas flow is ascertained by means of a wet test meter, and it is possible, by the manipulation of control taps, to test six meters up to 10-light and six 20-light meters and upwards at one and the same time, which obviously entails a considerable saving of labour. For these tests, air is used entirely instead of gas. The air is compressed by a Keith-Blackman rotary compressor direct coupled to a ¾-H.P. electric motor and governed to 5-in. water pressure by a Bruce-Peebles governor. Before reaching the governor, however, a branch is taken off for the purpose of testing high-pressure meters up to 180-in. pressure.

There is also laid-on a gas supply to which is fitted a sealed control tap to the holders; and this is intended for emergency in case the air arrangements break down. It has not been necessary to use it. On each side of the test room are racks for the meters awaiting test. All meters brought in from the district are tested, and the result recorded on a card. Those proved to be correct are passed on to be painted.

Adjoining the north side of the test room is fitted a paint spray unit for the meters, similar to the installation in the stove shop; and the required compressed air is taken from the compressing plant in the stove shop. We have also fitted here a switch, so that the spray men can control same.

The exhaust of the spray hood is fitted with a ¾-H.P. motor and an 18-in. Keith Blackman exhaust fan, and is connected to one of the main flues of the building. After spraying, the meters are placed on drying racks, and returned to stores when the paint hardens.

The meters found to be incorrect have the Government seal broken at once, and are given out in batches to the meter repairers.

When we first came to Market Street, the shop was laid out for process work on similar lines to the stove shop, resulting in increased output. For the past 16 months piece-rate prices have been in practice, giving further improved results to the satisfaction of both the Company and workmen. The standard of work has been maintained; and it is our practice to see that first consideration is given to the quality of the work. The meter tinsmith, on receiving his allotted meters, takes off the top, valve box covers, backs and fronts; and the top mechanism, index, valves, and cock plate are afterwards removed and the parts placed in a special tray with compartments numbered to correspond with the meters. The meter is now said to be stripped, and the interior is thoroughly cleaned. The diaphragms are tested for tightness with the King's gauge. The foreman examines all meters and gives instructions as to necessary repairs; and should the diaphragms be porous, they are replaced. Those found to be in good condition have a hole cut in the centre of the tin disc, large enough for the hand to be inserted, and the skin is thoroughly oiled by a special mixture, both inside and out, after which the hole is closed with a special centre disc, soldered on. The meters are again tested for soundness of diaphragms; and after the foreman's inspection, if found correct, the backs and fronts are refixed. The meters are now forwarded to the grinder, who carefully grinds and polishes the valves and grids. The meters are returned to the tinsmith who, after cleaning the top mechanism and winding the index back to zero, replaces same and carefully repacks the stuffing boxes. In all meters the stuffing boxes are repacked, as they are vital parts.

After further inspection by the foreman, the meters are tested for external leakage and soundness at 6-in. pressure by means of a King's pressure gauge. At the same time observations are made for "steady lights," to prove if the valves have been correctly set and the mechanism is working freely. This test is carried out by gas, and is the only test for which we are unable to utilize air. The apparatus consists of 5½ c.ft. holder (also reconstructed in our workshops). It is supplied by gas and fitted with a King's gauge and the necessary connections. The pressure of gas is increased by adding weights to the holder. The meters are tranferred to the test room, and further tests in accordance with the Gas Acts are made to see if any unregistered gas will pass at 5-in. pressure. They are then finally tested for correct registration at 2-in. pressure. After passing these somewhat severe tests the meters are returned to the tinsmith, who refixes the top and the necessary seal cup, number disc, &c. The meters are then sent down the lift to the transport department to be forwarded by motor to the official testing station, where, after being passed, they are stamped with the Government seal. The motor collects and returns them to the meter shop to be sprayed, after which they go back to stores.

With prepayment meters the mechanism of the attachment is carefully cleaned and overhauled, and is then subjected to a test for correctly passing the stipulated quantity of gas for the coin, and to see that the valve opens and closes properly. The apparatus for testing the slot-meter mechanism is of our own design, and adjoins the test room. It is constructed so that six meters can be tested simultaneously.

A bench of sufficient length comfortably to carry six slot meters is provided; and on wall brackets are six 5-light test meters, three of which have been specially made for us, each with three large distinct dials and loose pointers, so that they can be set to zero at the commencement of each test. The meters will register up to 100 c.ft.; and a reading as fine as 0·001 c.ft. can be taken. Air is compressed by a small Keith rotary compressor direct coupled to a ½-H.P. motor and governed to a constant 3-in. pressure. To deal with the excess of compressed air, when only one or two meters are under test, a special blow-off valve is fitted. The air and gas supplies are connected in such a manner to the inlet of the test meter that either can be used. From the outlet of this meter a pipe is carried to the inlet of the slot meter, the outlet of which latter is connected to a rail fitted with 6 to 10 flat-flame burners, each containing a special gauze to prevent flashing back.

To ascertain if the meter valve opens properly, ½ c.ft. of gas is passed through and burnt off on the tap rail, then, by means of a three-way cock, air allowed to pass until within a cubic foot of the test quantity, when again gas is used to indicate the rate of shutting-off at the valve.

Nearly 1900 meters of various sizes were repaired in this shop in the first quarter of this year. A recent addition to the work in this shop is the conversion of 3-light ordinary and automatic meters with worn attachments to 5 light capacity ordinary; and these are being successfully turned out. The brass-finishers deal with all the brasswork, testing the job by water pressure up to 200 lbs. before going into stores and renovating and repairing any that has been returned to us and is worth reclaiming. Their workshop is fitted with power-driven lathes and necessary tools, including a small brazing plant, &c. The time at my disposal has only permitted of a brief description of these new works; and I feel that each section is worthy of the fullest description in a paper to itself. The building not having any yard space, all main pipe fittings are stored in the old yard at Forth Street, where also all our motor vehicles are garaged.

Having thus described the activities of the distribution department, Mr. Batt, assisted by several officials, took the members round the various workshops, where they saw the processes in operation. Considerable interest was taken in the work of restoring cookers to a condition bordering on newness. They were seen in the condition in which they are brought to the workshops from the homes, and were then seen passing through the hands of the workmen until they reached the finished stage.

Tea was afterwards served, and a vote of thanks to Mr. Batt was moved by Mr. W. E. OULDS, of Tynemouth. He remarked that the cost of overhauling and renovating gas apparatus was an important item, and one which called for careful consideration. It was interesting to learn that the method adopted by the Newcastle Company enabled them to put the cookers in the furnace without dismantling them, but he was rather disappointed to learn that the cookers had eventually to be dismantled in order to replenish the slag wool packing. He assured Mr. Batt that they had been extremely interested in all they had seen and heard.

Dr. WEYMAN, of Newcastle, seconded. He said that the costs of distribution were a heavy portion of the total cost of gas; and it was important that every care should be taken to keep costs down. The methods adopted by the Newcastle Company had shown them how savings could be effected by organization. The thing which had impressed him was the way in which the cookers were renewed. The cookers were brought into the workshops in a most appalling condition. Very often they had been placed in corners in the home where only the front could be got at by the housewife, and the accumulation of dirt and grease on them was shocking. They left the workshops, however, almost brand new. The process of removing the deposits was drastic, but it had to be so. He congratulated Mr. Batt and his colleagues on the work which was being done.

Strabane Gas Price.—The Strabane (co. Tyrone) Urban District Council have reduced the price of gas by 9d. per 1000 c.ft., to 6s. 9d. This step has been taken on the Gas Committee's recommendation on receiving the balance-sheet and report regarding the working for the past year. A vote of congratulation was passed to Mr. Rooney (the Gas Manager) on his successful work.

Forfar Gas-Works Extension.—The Forfar Town Council have decided to proceed with the proposed extension to the gas-works, at an estimated expenditure of £19,750. Provost Moffat moved the adoption of the recommendation of a special meeting of the Council that a Provisional Order with power to borrow up to £40,000 be applied for. This would probably mean an increase of 3d. or 4d. per 1000 c.ft. in the price of gas.

Results at Llandudno.—In moving the adoption of the Gas Committee's minutes at the Llandudno Urban Council last week, Mr. R. C. Baxter, the Chairman of the Gas and Water Committee, referred to the results at the gas-works during the past year. The figures given, he said, showed that the heavy expenses incurred in 1920-21 had been justified. During the year over 5 million c.ft. more gas had been manufactured. The quantity of coal carbonized during the year was 6774 tons; the gas made being 140,221,000 c.ft., and the coke 4577 tons. There were 1986 cookers now in use—an increase of 68 on last year—and 771 gas fires and radiators. Of 319 gas-meters tested during the year, 90 were found to be not registering, 21 were slow, and 31 fast. He congratulated the Gas Manager, Mr. Duxbury, on the excellent results he had achieved. He also paid a tribute to the staff and workers at the gas-works for their share in the work.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

Progress of Bills.

Manchester Corporation Bill: Reported from the Select Committee, with amendments.

Statutory Gas Companies (Electricity Supply Powers) Bill.

A Bill to facilitate the supply of electricity by statutory gas companies was last Friday presented by Mr. Clarry, supported by Sir William Jones, Mr. Clayton, Col. Watts Morgan, Mr. George Spencer, Mr. Haydn Jones, and Mr. W. A. Jenkins.

The Bill received its second reading on Monday, and was committed to a Standing Committee.

HOUSE OF COMMONS.

Progress of Bills.

Rotherham Corporation Bill: Reported with amendments, from the Local Legislation Committee.

Gas Regulation Act.

Copies were presented of drafts of Special Orders proposed to be made by the Board of Trade under section 10 of the Act, on the application of the Burton-upon-Trent Corporation, Urban District Council of Skipton, and the Walsall Corporation.

THE LONDON POWER BILLS.

The opposition of the Aldershot Gas, Water, and District Lighting Company to the London Electricity Supply (No. 2) Bill in regard to the supply of electricity for station lighting, &c., when such supply is given in conjunction with traction supply from an outside area (referred to in our last issue, p. 608) has been met by the promoters of the Bill inserting in the clause in question suitable words which will prevent the competition complained of, without consent.

RHYMNEY AND ABER GAS BILL.

HOUSE OF LORDS COMMITTEE.

(*Before Lord* MUIR MACKENZIE (*Chairman*), *Lord* WYFOLD, *Lord* O'HAGAN, *Lord* LOCH, and *Lord* TREOWEN.)

Second Day's Proceedings.—Monday, May 26.

[For first day's proceedings, on May 23, see *ante*, pp. 609-10.]

[Mr. Arthur Valon appeared for six local authorities opposing the Bill; but, owing to the course the proceedings took, he was not called.]

Continuing his evidence on behalf of the promoters, Mr. Cash gave a brief summary of the trend of legislation which had led up to the introduction of the basic price, and handed-in a table showing the prices charged and the dividends paid by various companies which had, before the war, changed over from maximum-price to sliding-scale companies. In the case of the Liverpool, Deal and Walmer, and Leighton Buzzard Companies, their Acts changing them over to the sliding-scale system were obtained in 1914. War conditions followed immediately, and the shareholders were very badly hit, in that the dividends were decreased considerably below the level obtaining before the war. Witness emphasized strongly the risk which these Companies incurred by the change, and pointed to the unfair effect of the sliding-scale without the protection of the basic price. It was the unfair effect of the sliding-scale upon the shareholders which had induced the South Metropolitan Company to ask Parliament for relief in 1920. They had urged upon Parliament that the sliding-scale had broken down under war conditions; that there was the commercial element for the protection of the consumer, in that there was competition with electric light which did not exist when the sliding-scale was first introduced; and that shareholders were not getting a reasonable return. One very important matter was that the investor must have an assured dividend, with a prospect of something better, if money was to be raised on favourable terms.

Figures were then given showing the results of the working of the basic principle in various companies. In the case of the South Metropolitan Company, in 1922, the shareholders received an amount which exceeded the total of the basic dividends by £33,049; £1414 was allocated to reserve; the co-partners received £34,463; and the proportionate amount received by consumers by reason of the reduction of price below the basic figure was £206,778. In 1923 the shareholders received £49,575 above the basic dividend, and £16,500 was transferred to reserve; the co-partners received £66,075; and the proportionate amount received by consumers was £396,450. In the case of Cardiff Gas Company, in 1922 the shareholders received an extra £5118; the co-partners £5015; and the proportionate amount to the consumers was £30,090. In 1923, the figures were £5118, £5768, and £34,608. In the case of the Chester United Gas Company, the amounts were £1178, £1193, and £7158, in 1923. No increased dividends were paid by the Swansea Company, but the co-partnership scheme benefited, and money was transferred to reserve.

Witness then handed-in further detailed tables, which showed the estimated costs of supplying coke-oven gas, and coal gas manufactured by the Company (based on the amount of gas sold in 1923), and set out the calculations by which he had arrived at the basic prices, as amended, in the Bill—namely, 12·14d. per therm in the case of coke-oven gas, and 16·32d. per therm in the event of the Company making their own gas; there being in each case a reduction of 1·4d. in the Rhymney area.

Sir LYNDEN MACASSEY, K.C. (before cross-examining Mr. Cash on behalf of the Gelligaer and Caerphilly Urban District Council) asked if the Committee would adopt the course of arriving at a decision first with regard to whether the basic price and basic dividend principle ought to be applied at all in this case, and disregarding for the time being the question of what particular figures should be put into the Bill. The problem of arriving at those figures would involve a most alarming detailed inquiry into the elaborate and complicated tables which Mr. Cash had submitted; but if the Committee took the view of the local authorities opposing, and did not approve of the principle, the examination of the figures would be, to a great extent, unnecessary.

The Hon. EVAN CHARTERIS, K.C. (for the remaining petitioners) supported Sir Lynden Macassey's application, and added that, in any case, Parliament had provided machinery under the Gas Regulation Act by which the figures could be arrived at. He suggested that it would be asking too much of the Committee to determine minute points as to whether 0·58d. per therm was the right allowance for repairs of works, and so on, when machinery for arriving at a just conclusion was in operation from day to day in another department. The same point had arisen when the Swansea and Windsor Companies were in Parliament; and in those cases, when the principle was settled by Parliamentary Committees, the matter was referred to the Board of Trade.

Mr. TYLDESLEY JONES, K.C. (for the promoters), said that in the case of the Cardiff Company's Bill the principle was settled, in favour of the basic price, and the figures were inserted in the Bill. If the basic principle were approved in the present case, there would be no difficulty in arriving at the proper figures—in Committee, as in the Cardiff case. These were matters which Committees of both Houses decided every day, and he deprecated the holding of two inquiries on the proposals of the Bill, on the score of the delay and expense involved. He did not object to the principle being decided first, for, if the Committee approved of it, the parties might be able to agree on the figures. They had done so in other cases.

It was agreed to settle the question of principle first, and accordingly Sir Lynden Macassey's cross-examination of Mr. Cash was confined to this point. Counsel put it to witness that the sliding-scale principle, by which provision was made for reduction of dividends if prices increased, was in consonance with what Parliament had done in regard to statutory undertakings other than gas, such as electricity, railway, and dock undertakings; but witness replied that gas companies had been exceptionally badly treated in comparison with other undertakings, and it was this fact which had induced Parliament to pass the Gas Regulation Act and the South Metropolitan Company's Act. The effect of the provisions relating to gas undertakings had been an unfortunate one on the investing public.

Counsel then pointed out that 233 sliding-scale and 173 maximum-price companies in the United Kingdom, up to the end of 1923, had obtained Orders from the Board of Trade to increase their charges, and had evidently found that the Board of Trade were sufficient for their purposes. Witness replied that it was essential that they should increase their prices, and they had adopted the only remedy.

After pointing out that a co-partnership scheme could be adopted by a sliding-scale company as well as by a basic price company, Counsel referred to witness's statement that competition of gas companies with electricity was an important factor in inducing gas undertakers to maintain efficiency, and suggested that it was not so great an inducement as was the obligation to reduce dividends if prices increased. Witness, however, held that it was, because the element of competition and *esprit de corps* was now very much more powerful than when the sliding-scale was first introduced. He pointed out that gas companies were not paying the full dividend they were entitled to pay under the sliding-scale, and he did not see why they should not do so if Counsel's argument were sound.

Asked if there were circumstances which differentiated the Rhymney and Aber Company from those who had obtained Orders from the Board of Trade authorizing increased charges, witness said there were. In the first place, they were making a fresh start as a gas company alone; and it seemed to him that this involved another point of principle—namely, the question of what should be the standard dividend. Secondly, there was the character of the supply; and the position of the Company was distinguished from that of every company which had applied to the Board of Trade for an increase, in that the actual price to-day was lower than it was before the war.

Witness would not agree with Sir Lynden's suggestion that the Company wanted an unfettered right to say how much they would increase their price, if it were increased, whereas, under the existing provisions, they would have to go to the Board of Trade. Neither would he agree to the suggestion by Mr. Charteris, who also cross-examined, that Parliament was being asked to guarantee basic dividends irrespective of what sort of management was maintained.

Mr. TYLDESLEY JONES, in re-examination, said the proposals in the Bill were very much on the same lines as the present system of railway charges—a definite revenue was guaranteed to provide a standard dividend, and prices were fixed accordingly. Any economies effected by good administration and management were shared between the shareholders and the public, in the proportion of one-fifth and four-fifths respectively. Also, if the powers asked for in the Bill were obtained, the Company would be able to issue the capital at present unissued on much better terms.

Dr. Charles Carpenter (President of the South Metropolitan Gas Company) then gave evidence as to the working of the basic price and dividend system by his Company. The South Metropolitan Company decided to come to Parliament in 1919, as the result of the complete breakdown of the sliding-scale. They had come to the conclusion that it was not only incomplete, but defective, and had set to work to devise something better to take its place. Under the sliding-scale they had, for the first time, taken the consumers into a sort of partnership; but one of the defects of the sliding-scale was that it paid no attention whatever to the interest of the employees in the success or otherwise of the undertaking. The basic price and dividend scheme worked excep-

tionally well; and not only was it fair to consumers, shareholders, and employees, but it could be understood by all. He did not think one consumer in a thousand understood the sliding-scale. Out of 7000 or 8000 employees, half-a-dozen might be found who understood it, and he was not sure that the shareholders were very much less ignorant. But all understood the basic price system, because they knew that, for every £1 saved, 15s. went to the consumer, and 5s. was divided between capital and labour. Messrs. Bryant and May's had adopted a system which was practically identical, and it could be applied to most industries, with modifications. In the gas industry it had produced something which the employees could understand, and which gave them an inducement to do their best for the undertaking, in a way which was never achieved by the sliding-scale; and the South Metropolitan Company had been able to supply gas more cheaply than would have been the case in other circumstances. Dr. Carpenter also quoted a statement made by the Deputy-Chairman of one of the largest banks, that undoubtedly the basic price principle inspired a greater confidence in the investor than existed under the old sliding-scale.

Cross-examined by Sir Lynden Macassey, Dr. Carpenter agreed that co-partnership was not special to the basic price system in one sense, but in another it was. Under the sliding-scale all the co-partnership schemes in vogue had no statutory cognizance, and Boards of Directors could put them in the waste-paper basket when they liked; but in 1920 Parliament had recognized an obligation, not only to capital, but to the employees, and gave them a statutory right.

Counsel pointed out that the co-partnership scheme in the Bill was optional, but Dr. Carpenter said he had not studied the provisions of the Bill closely. Mr. Tyldesley Jones, however, disagreed with Sir Lynden, and said it was provided that the co-partners' share must be applied to the co-partnership fund.

The Hon. EVAN CHARTERIS, referring to capital and basic dividends, said that in the South Metropolitan Company's Act the basic dividend was 6 p.ct. on new capital and 5 p.ct. on the old; but in the present case it was 7 p.ct. for both new and old capital. He also pointed out that the Gas Light and Coke Company were a sliding-scale Company, and had a co-partnership scheme; but witness said they had not supplied their consumers so cheaply as had the South Metropolitan Company. In re-examination, he said that the consumers of London would have been very greatly better off if, when the South Metropolitan Company had its basic price fixed, the Gas Light and Coke Company had had a similar system. The South Metropolitan Company, knowing that they would be entitled to at least a 5 p.ct. dividend, were enabled to take commercial risks which were not possible under the sliding-scale principle. As to the old capital in the South Metropolitan Company's case, Mr. Tyldesley Jones pointed out that some of it was previously a 10 p.ct. stock which had been converted, and the pre-war dividend was, in fact, 5½ p.ct.

In his concluding remarks, Dr. Carpenter referred to a speech which had been made some years ago by Mr. John Burns in a discussion on the Statutory Undertakings (Charges) Bill, in which he had said that there were three things in his lifetime as a public man of which he had never tried to probe the mysteries. One of them was bi-metallism, the second was the sliding-scale in gas, and the third was perpetual motion.

One of the Employee-Directors of the South Metropolitan Company was present, and was prepared to speak as to the value of the basic price and co-partnership system to the employees, but was not called upon to give evidence, the Committee being satisfied, evidently, with Dr. Carpenter's evidence.

The Committee then adjourned until Tuesday, May 27, when Mr. Arthur Collins, late City Treasurer of Birmingham, gave evidence on behalf of the petitioners. Mr. H. C. Honey was then asked if he would state the views of the Board of Trade on the basic price system, and he stated that the Board were prepared to rely upon the ordinary sliding-scale provisions, rather than to introduce provisions of the nature proposed in the Bill. Up to the present the Board had not felt that the policy of Parliament with regard to the basic price had been sufficiently defined to justify them in adopting the new principle. Apart from this they had not been satisfied that the new principle was necessary, or that it was a desirable one. On the Committee meeting again last Monday, it was announced that an agreement had been reached, under which the Company would adopt the sliding-scale principle. This portion of the proceedings will be reported next week.

ROTHERHAM CORPORATION BILL.

The gas clauses in the Bill of the Rotherham Corporation (see "JOURNAL" for Jan. 9, p. 83) were dealt with by Section B of the Local Legislation Committee of the House of Commons (presided over by Mr. CAPE), on Wednesday and Thursday, May 21 and 22, and amendments were made.

Mr. HARRY G. PRITCHARD (Messrs. Sharpe, Pritchard, & Co., Parliamentary Agents) said that a large part of the gas supplied by the Corporation was not made by them, 70 p.ct. being taken in a crude form from the coke-ovens of one of the neighbouring collieries, and purified. The price of gas in Rotherham was 7·2d. per therm, which compared very favourably with any other undertaking of similar size in the country. The clause providing that the Corporation should not be obliged to give a supply for purposes other than lighting or domestic use, where the capacity of the main was insufficient, or if such supply would interfere with the sufficiency of gas to be supplied by means of that main for lighting or domestic purposes, has been withdrawn from the Bill.

There was some discussion with regard to the clause giving further powers to enter premises and to remove fittings. The first part, which proposed to extend section 22 of the Gas-Works Clauses Act to all cases in which persons entering into occupation of premises previously supplied with gas shall not require a supply of gas or the hire of fittings, was referred to in a report by the Board of Trade, in which it was said that it was similar to clause 31 of the House of Lords Model Bills and Clauses (as amended 1922). With regard to those parts of the clause imposing penalties upon persons refusing to permit entry to the premises, and giving powers to enter unoccupied premises forcibly after not less than 48 hours' notice to the owner, or after affixing a notice upon a conspicuous part of the premises, the Board were not aware of any precedents for these. It was pointed out that in a clause among the miscellaneous provisions of the Bill, the Corporation sought to apply the provisions of sections 102 and 103 of the Public Health Act, 1875 (with regard to power of entry to premises and penalty for disobedience of an order), and if this clause were allowed the provisions in the former clause would seem to be unnecessary. The Board suggested that the Committee should satisfy themselves that the provisions in question should be included.

The Home Office, who also reported, pointed out that provisions making a person liable to be prosecuted for obstructing entry appeared to be objectionable, and went beyond the general law as contained in the Gas-Works Clauses Act, under which power of entry for the purpose of removing fittings, &c., was not enforceable by a penalty. The Home Secretary suggested that, unless the Corporation could satisfy the Committee that serious difficulties had been experienced under the existing law, the proposal should not be allowed. In any case, it should be limited to cases in which entry was refused after due notice was given to the person having control of the premises. As to forcible entry of unoccupied premises, it was pointed out that section 22 of the Gas-Works Clauses Act already made provision for entry into unoccupied premises, and the Corporation should be asked to explain the need for this part of the proposed clause. If the object were to meet a case where the owner of the premises could not be found, and the clause were allowed by the Committee, it should be amended so that the Corporation would be empowered to enter forcibly after giving not less than 48 hours' notice to the owner, or, if he were unknown, "and cannot be ascertained after diligent inquiry," after affixing a notice upon a conspicuous part of the premises.

Mr. PRITCHARD said that section 22 of the Gas-Works Clauses Act applied only to a case where a consumer ceased to take a supply. A consumer of gas, in fact, never did cease to take a supply, but sometimes a new tenant of a house previously supplied did not require a supply, and that case was not dealt with by section 22.

Replying to the Chairman, Mr. PRITCHARD said he had no precedent for that part of the clause providing for a penalty to be imposed for refusal to allow entry; but his precedent for that part dealing with forcible entry was the Chesterfield Corporation Act, 1923, though in that case it applied to electricity, and not to gas.

Mr. *Charles L. Des Forges* (Town Clerk of Rotherham) said that section 22 of the Gas-Works Clauses Act was incorporated with the Corporation's Acts, but the difficulty was that it did not give power to enter forcibly. The Corporation did not wish to knock a man down at the door if he refused to allow them to enter and take away their own property, but that they should have the right to summons him. Witness referred to a difficulty which had arisen within the last twelve months, where gas-cookers belonging to the Corporation were left in premises after the consumer had removed. The new occupier did not use gas, and would not pay for it. In addition, he would not allow the cookers to be taken away, and it was only after months of difficulty that the Corporation were able to get them. They had adopted the doubtful resource—he did not know whether it was legal—of going to the County Court and suing the occupier for the value of the fittings. It had then occurred to the Corporation how defective clause 22 of the Gas-Works Clauses Act was, and that under it they could do nothing unless entry was permitted. Dealing with the provisions in the proposed clause with regard to forcibly entering unoccupied premises, witness said the Corporation had omitted to include the words suggested by the Home Secretary as to an owner who could not be ascertained after diligent inquiry. In justification of this, he said that, as a lawyer, he did not like the expression "diligent inquiry," because it could not be determined—except by action before a High Court Judge—what was meant by "diligent." The Corporation might force an entry after making inquiry which they considered was diligent, after which the owner might come along and bring an action for damages in the High Court; and if the Judge did not think the inquiry was diligent, the Corporation would have to pay damages.

On behalf of the Home Office, it was stated that they attached importance to those words. They had been inserted in Private Bills for many years, and the Home Office were not aware of any difficulty. The words occurred in the Chesterfield Act already referred to.

Mr. PRITCHARD, in reply to Sir Joseph Nall (a member of the Committee), said he would not require the part of the clause relating to penalties for obstruction if the later clause extending the provisions of the Public Health Act were allowed. He did not want to lose one, however, and then to be told later that he had lost the other as well. He submitted the proposition was reasonable; if a man did not permit him to enter a house and take away things which he had the statutory right to do, should there not be a simple remedy—namely, the ordinary proceedings before Justices?

Mr. PATTINSON (a member of the Committee) said there could be no objection to the insertion of the words "diligent inquiry." The clause provided that only 48 hours' notice need be given before forcing an entry. Supposing he were the owner of a house, and he could not be found, were the Corporation to break into the house?

The Committee decided that the part of the clause imposing penalties upon persons refusing entry should be deleted, and, with regard to forcible entry, the words "and cannot be ascertained after diligent inquiry" should be inserted.

Another clause in the Bill related to the provision of a valve where high-pressure air was used. In this it was provided that the Corporation should give public notice of the effect of the provisions of this clause in two or more newspapers circulating in the borough. The Home Office, however, pointed out that the clause differed from the model form by substituting a notice in local newspapers for a notice on the demand notes, and doubted whether a newspaper advertisement was sufficient to bring the provisions of the clause to the notice of consumers. The Board of Trade also reported that it differed from the model clause in that respect, and also in that the valve or other appliance was to be fixed by the consumer and be approved by the

Corporation, who would then, apparently, be in a measure responsible for its efficiency.

Mr. PRITCHARD said the words "to be approved by the Corporation" were inserted in the Chesterfield Act last year, and that addition seemed to be desirable. For the other matter he had no precedent. He pointed out that the clause did not provide for the imposition of a penalty. It was a provision which interested, he supposed, 1 p.ct. of the consumers. The Corporation had already a demand note containing a large number of notices, and it seemed unnecessary to add a notice with regard to a valve. If a man used high-pressure air, and it was discovered that he had not provided the valve, he was merely told that he must provide it, and the supply of gas was not cut off until he had been told a number of times, but had declined to provide it. The last thing the Corporation wished to do was to cut off the supply. Mr. Pritchard had no objection to a provision that the supply should not be cut off until the Corporation had given reasonable notice.

Mr. *Des Forges* added that if the demand notes were filled-up too much with notices, they would not be of any use to anybody.

In the course of further discussion, it was suggested that words should be added so that, if a consumer failed to comply with the requirement of the Corporation, the Corporation might cut off the supply "after giving to him not less than 14 days' notice" of their intention to do so. It was also stated that Mr. H. C. Honey (Director of Gas Administration, Board of Trade) had approved of those words being added.

Mr. PRITCHARD said it was important that the Committee should appreciate what the responsibility was. The whole object of the clause was to prevent danger to the mains and the general supply; and during the 14 days that would elapse before the supply could be cut off, considerable danger was being run. In view of this, he was a little doubtful whether the words ought to go in.

Asked by Sir Joseph Nall how the individual consumer would be informed of the provisions of this clause, Mr. PRITCHARD said that probably many of them would not see the advertisements at all. In practice, when it was found that the apparatus was being used and was not properly controlled, the consumer was told to see to it at once.

Finally, the Committee decided that the clause should remain, subject to an amendment to the effect that if any consumer failed to comply with the requirement of the Corporation, the Corporation, "after due notice," may cease to supply gas to him.

The clause applying the provisions of the Public Health Act with regard to entry of premises had not been reached when the Committee adjourned until Tuesday, May 27.

The clause in this Bill, applying the provisions of sections 102 and 103 of the Public Health Act, 1875 (with regard to entry into premises), to the gas and other undertakings of the Corporation has been approved by Section B of the Local Legislation Committee of the House of Commons (see "JOURNAL" for Jan. 9, p. 83).

LEGAL INTELLIGENCE.

KIRKCALDY DISTRICT COMMITTEE v. BUCKHAVEN AND LEVEN GAS COMMISSIONERS.

Judgment has been given by Lord BLACKBURN in the Court of Session, in an action by the Kirkcaldy District Committee of the County of Fife against the Buckhaven and Leven Gas Commissioners to interdict the defenders from opening up the roads and highways administered by the pursuers and lying outwith the boundaries of the burgh of Leven and the amalgamated burgh of Buckhaven, Methil, and Innerleven without the consent of the pursuers.

Lord BLACKBURN, in his judgment, said that the defenders were incorporated as the Joint Gas Commissioners for these burghs by the Buckhaven and Leven Gas Commission Order Confirmation Act, 1922. In 1920 the burgh of Buckhaven, in accordance with the provisions of the Burgh Gas Acts, acquired the whole undertakings of the two companies; and a Provisional Order was presented by the Town Councils of both burghs for authority to amalgamate for the carrying out of the purposes of the Gas Supply Act of 1876, and for the constitution of a Joint Gas Commission. The powers craved were granted, and the whole gas undertakings were made over to and vested in the defenders as Joint Gas Commissioners. The undertakings acquired by the defenders included a certain number of pipe lines which extended outwith the boundaries of either of these burghs into the Kirkcaldy District of the County of Fife. These pipes were laid by the original private companies along and under the County roads, and must have been laid with the consent of the County Local Authorities at the time. The conditions under which these companies were allowed to lay their pipes under the public roads for which the County Local Authorities were responsible were not disclosed, but the defenders did not aver that the private companies ever obtained authority to open up the roads after the pipes had been laid, for the purpose of examining or repairing them, without the consent of the County Authorities. It was stated at the bar that the companies had never attempted to exercise any such right without first applying to County Authorities for leave to do so. In this action the defenders claimed that they had obtained such right under the Act of 1922, which confirmed their Provisional Order. It was averred that they had already opened-up certain roads without the pursuers' consent; and this was admitted. The pursuers averred in wider terms that the defenders had no right, title, or power to open-up roads outwith the burghs; but this averment was followed by a statement that the defenders threatened to open-up further roads in the same district, which was qualified by the words "without the pursuers' leave or consent." In their answer, the defenders denied the wider averment, but admitted the threat to open-up the roads without the pursuers' consent. The argument submitted to his Lordship raised no question as to what the defenders' rights might be in the event of the pursuers refusing to consent without good reason to operations necessary for the repair or examination of the pipes; and on that question his Lordship expressed no opinion. The only question argued before him was whether the defenders had right *ex proprio motu* to open up the roads without any communication to the pursuer and without endeavouring to obtain their consent. It was, in his opinion, clear from the terms of the Provisional Order that the Joint Gas Commissioners were appointed as commissioners to manage an undertaking formerly intended for the purpose of supplying gas to the burghs which the applicants for the Order represented. In terms of sections 42 and 43 of the Burgh Gas Act, 1876, it was within the power of Burgh Gas Commissioners to contract with adjacent local authorities for the supply of gas, and therefore to supply the adjacent district with gas. These two sections were immediately followed by section 44, which gave them authority to break-up, without notice, for the purposes of their Act, any street under their own control. This power was clearly confined to public streets within the limits of the burgh. But the Burgh Gas Acts did not give Burgh Gas Commissioners any authority to interfere with the roads beyond the burgh's boundaries without the consent of the local authorities responsible for the upkeep of such roads; nor did the defenders' Provisional Order expressly confer upon the defenders any such power. It was argued that the conveyance to the defenders of an undertaking which included lines situated outwith the burgh boundaries constituted the whole area covered by the pipes into a special district, and that they thereby acquired in terms of section 6 of the Act of 1847 the same powers over the whole roads in the district as they certainly possessed over the roads within the burgh boundaries. His Lordship was unable to draw any such inference from the terms of the Order, and in his opinion the rights of the defenders in the pipes conveyed to them situated under the roads outwith the burgh remained exactly the same as they would have been had they themselves, as Burgh Gas Commissioners, placed the pipes there. The roads outwith the burgh not being under the control of the defenders, the powers conferred upon them by section 44 of the Act of 1876 did not apply, and they were not entitled to interfere with the roads without giving notice to the authorities having control of the roads. So far as his Lordship could find, there was no restriction in the Act as to the length of notice required from the Burgh Gas Commissioners of their desire to open-up a road or street not under their own control. It was, he thought, clear that, following upon the notice given, they would require to obtain the consent of the authority responsible for the roads before opening them for the purpose of laying a new line of pipes. But where the purpose was to execute repairs, the necessary notice might vary according to the circumstances. For instance, in matters of urgency owing to a burst pipe immediate steps might require to be taken. In his Lordship's opinion the defenders had no right to lay any fresh lines of pipes without the pursuers' consent, nor any right to interfere with the road under the control of the pursuers for the purpose of repairing existing pipes without giving such notice to the pursuers as would be reasonable in the circumstances. This, he thought, was all the pursuers really desired; and if they had good reason for withholding their consent or for preventing the road being interfered with, they would be entitled to be heard before the defenders could take any further action. A subsidiary argument was based on section 2 of the Act of 1922. It was argued that this clause embodied the only protection enjoyed by the pursuers with regard to the defenders' operations on their roads. In his Lordship's opinion, on a sound construction of the section, it provided only that, once work on the roads had been commenced, it should be executed with dispatch, and that if any question arose between the parties as to the opening of the roads for access to the pipes, it should be settled by arbitration. He would accordingly pronounce a finding that the defenders are not entitled to open-up roads and highways administered by the pursuers, for the purpose of laying any new line of pipes, without the consent of the pursuers, nor are they entitled to open the roads for the purpose of executing repairs without giving the pursuers such notice as may be reasonable in the circumstances to enable the pursuers to intervene, if they desire to do so. If that finding was not sufficient for the parties, he would grant interdict in similar terms.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for May 28.]

Nos. 12,212 to 12,826.

APPLEBY, E. G.—"Gas producers." No. 12,606.
BENTLEY, G. H.—See Appleby, E. G. No. 12,606.
BIRKS, N. A.—"Apparatus for cleaning gas, &c., pipes by suction." No. 12,549.
CHEMICAL ENGINEERING AND WILTON'S PATENT FURNACE CO., LTD.—"Manufacture of sulphate of ammonia." No. 12,508.
DOCKREE, M. I.—"Inverted gas-mantles." No. 12,396.
FIGG, R. H. B.—"Pipe union." No. 12,266.
FISHER, A.—"Street lamps, &c." No. 12,638.
GAS-METER COMPANY, LTD.—"Dry gas-meters." No. 12,731.
GREENFIELD, J.—See Gas-Meter Company, Ltd. No. 12,731.
HILLER, B.—"Multiple inverted incandescent gas-burners." No. 12,519.
JUNKERS, H.—"Heat-exchanging devices." No. 12,521.
KÜNG, E.—"Generation of heating flames." No. 12,696.
MASON, A. E.—"Ball-and-socket joints." No. 12,213.
MONO GES.—"Analyzing test gases." No. 12,377.
MORGAN, H. R.—"Spigot-and-socket pipe joints." No. 12,723.
RUDE, J.—"Carbonization of solid fuel." No. 12,681.
SANDISON, A. G. S.—"Fluid meters, &c." No. 12,536.
TONGUE, A.—See Mason, A. E. No. 12,213.
VICTAULIC COMPANY.—See Morgan, H. R. No. 12,723.
WILTON, N. & T. O.—See Chemical Engineering and Wilton's Patent Furnace Co., Ltd. No. 12,508.

MISCELLANEOUS NEWS.

RAILWAY COMPANIES AND GAS SUPPLY.

Gas Undertakers' Obligations.

The controversy which has existed between gas undertakers and railway companies for some time past with regard to the obligations of the former to supply gas for other than lighting or domestic purposes from mains the capacity of which they consider to be insufficient for the purpose, seems likely to be brought to a head as the result of last Thursday's inquiry into the application of the Pinner Gas Company for a Special Order under section 10 of the Gas Regulation Act.

The clause which is usually asked for by promoters of Orders under this Act, and of Bills in Parliament, is contained in the House of Lords Model Bill, 1922; and it provides that the gas undertakings shall not be obliged to give from any main a supply of gas for any purpose other than lighting or domestic use in any case where the capacity of the main is insufficient for such purpose, or if such a supply would, in the opinion of the undertakers, interfere with the sufficiency of the gas required to be supplied by means of such main for lighting or domestic purposes. The railway companies, who use gas for various purposes from gas undertakings throughout the country, hold that the clause in that form is prejudicial to their interests, and have been active for some time past in opposing Bills and draft Orders in which it was inserted. Arising out of this opposition, efforts have been and are being made by the National Gas Council and the railway companies to arrive at an agreed clause in this connection. In view of this, a number of gas undertakers, when applying to the Board of Trade for Orders, have decided to leave the matter over, pending an agreement between the National Gas Council and the railway companies, and have undertaken to insert any clause so agreed. Unfortunately, however, no decision has yet been arrived at. Meanwhile, Orders have been made which do not contain the clause, and the promoters are thus left without powers in this respect, until such time as they apply to Parliament or the Board of Trade for further Acts or Orders.

In these circumstances, therefore, it would seem that delay in arriving at an agreement is in favour of the railway companies. They complain, however, that the clause to which they object is still being asked for, and that, though they are anxious to fight the matter out, they are not given the opportunity to do so. On several occasions, it is said, they have engaged an array of counsel to appear before Parliamentary Committees to contest the granting of the clause, but, after having gone to this expense, they have been unable to proceed because the promoters in question have withdrawn it. The Pinner Company, however, regard this clause as essential to them, and have undertaken to fight the matter out if the railway companies put down a motion, when their Order goes to Parliament for approval, for it to be referred to a Select Committee. It is probable, therefore, that we may soon see a settlement of this question, which has been hanging fire for a considerable time. However anxious the railway companies may be to settle it, they may be assured that their anxiety is shared by the gas industry.

[The proceedings at the inquiry into the application of the Pinner Gas Company for a Special Order will be reported in an early issue. —Ed. "G.J."]

BIRMINGHAM GAS DEPARTMENT.

Annual Report.

The annual report of the Birmingham Corporation Gas Committee, of which Alderman J. H. Lloyd is Chairman, was presented yesterday to the City Council.

The Committee state that the authorized capital (£3,410,604) remains unchanged after capitalizing the annuities at 25 years' purchase.

The amount of £296,655 still remains to be borrowed on account of the sanction granted for the construction of gasholders at Washwood Heath, and the trunk main to Sutton Coldfield. Capital has been raised to the extent of £3,113,949—an increase of £50,000 as compared with the figure for March, 1923—and the sum of £1,405,732 has been redeemed, thereby leaving £1,708,216 outstanding, as against £1,706,208 twelve months ago. Two items have been debited to capital account during the past year—namely, £38,279 on account of gasholders and £10,480 in respect of the new Erdington and Sutton trunk main. The revenue account shows that the expenditure for the year amounts to £2,343,787—a decrease of £62,434, notwithstanding the fact that additional quantities of coal were carbonized to meet the increased demand for gas. During the year, 799,159 tons were carbonized—an increase of 88,246 tons when compared with the previous year. There has been a substantial decrease in the charge for repairs, maintenance, and renewals at the various works, mainly due to less extensive repairs to carbonizing plant during the period.

The price of gas was reduced on three occasions during the financial year; the concessions in price representing a saving to consumers of £343,392. The gas sold during last year amounted to 12,017 million c.ft.—a figure never previously equalled in the history of the undertaking—and it is interesting to note that the quantity exceeds by approximately 11 million c.ft. the sales of 1918, when a large number of firms in the city were working day and night on munitions. The average net price charged for gas during the past year was 2s. 9·77d. per 1000 c.ft., representing an increase of 74 p.ct. above the price charged in pre-war days. The present scale price of 2s. 10d. per 1000 c.ft. is only 47·8 p.ct. above the price ruling at March, 1914. When it is realized that the charge for coal—after giving full credit for the receipts obtained from residual products—is still 107½ p.ct. above the prices ruling pre-war, the results are very gratifying.

The balance of the revenue account—£178,642—is transferred to the credit of profit and loss account, and, together with an amount of £12,426 representing income-tax recovered by reason of diminution of profit due to the war, provides a total profit of £191,068. Against this sum, interest and sinking fund charges have been made totalling £148,812, thereby leaving a surplus of £42,256, which sum—now that the restrictions imposed upon the undertaking by the Order made under the Statutory Undertakings (Temporary Increase of Charges) Act, 1918, no longer exist—is transferred to the relief of rates. The Gas Department, during the year, have also relieved the Borough Fund to the extent of £29,780 by concessions in the price of gas, &c., for public and court lighting.

The amount standing to the credit of the reserve fund is £78,963, of which £71,858 is represented by investments. Annuities to the value of £21,652 have been redeemed during the year through the sinking fund at a discount of £2515. There has been transferred £160,346 from revenue account to the credit of special maintenance account. This includes the annual contribution of £60,000 promised towards the cost of the reconstruction of the Nechells Works. The balance of £100,346 is less by £11,000 than the usual transfer. Since costs of production commenced to fall, it has been the policy of the Committee to pass on to consumers at the earliest opportunity the savings effected. The reductions in the price of gas made in September and December, 1923, have now to be carried for a full year, and it is estimated that gas revenue will decrease by £180,000 in the year ending March, 1925, assuming the quantity sold to be equal to that of the past year. In addition, residual products which provided net revenue to the extent of £810,643 have recently shown signs of weakening, and there has already been a considerable fall in the value of tar products.

The construction of the concrete tanks for the new holders at Washwood Heath is progressing satisfactorily; one tank being practically completed, and the excavation work for the second well advanced. The diameter of the tanks is 254 ft. and the depth 45 ft. The contract for the construction of the holders has been placed with Messrs. Clayton, Sons, & Co., Ltd., of Leeds; the cost amounting to £117,805. An order has been placed for the installation of a gas boosting plant at the Windsor Street Works at a total cost of approximately £2000. The new trunk main from Aston Church Road to Old Chester Road has been completed, and has resulted in greatly improved pressures in Erdington, enabling the fan plant there to be used to its full capacity for maintaining the gas supply in Sutton Coldfield and the districts beyond. As in the two previous winters, the Committee have, under the Government Unemployment Relief Scheme, undertaken, and are still carrying out, extensive examination and renewal of mains in highways under reconstruction in the city. A considerable number of extensions of the existing mains have been made during the past year to cope with the demands for gas, particularly in the outlying parts of the area of supply.

Coke.

An acute shortage of coke has been experienced since November last, the difficulties being contributed to by the early and prolonged winter, the limited supplies of household and other coals, and the improvement in trade. The Department were inundated with orders for coke at a period when, in normal times, reserve stock would have been built-up at the gas-works. Customers were obviously ordering coke because they were unable to secure coal; and though everything possible was done to meet the situation, the requirements could not be dealt with, and a system of rationing was temporarily adopted at the beginning of March last. This action was taken by the Committee in order to avoid the closing of manufacturers' works, and the consequent effect upon the development of trade in the city, and to reserve coke for the heating apparatus in hospitals, schools, and other institutions. During this period, the small sales at the gas-works were restricted to ½ cwt. each person; and in the month of March 60,000 customers were served in this way.

Statistics.

The following are comparative statistics for the years ended March 31, 1923 and 1924:

	1923.	1924.	Inc.	Dec.
Gas sold during the year (c.ft.)	10,937,923,300	12,017,086,400	1,079,163,100 = 9·87 p.ct.	—
New services laid during the year	2,795	4,723	1,928	—
Cooking and heating stoves sold during the year	2,235	3,016	781	—
Total number of cooking and heating stoves on hire at March 31	74,001	77,811	3,810	—
Total number of cookers supplied with prepayment meters at March 31	100,569	102,934	2,365	—
Total number of prepayment meters fixed or on consumers' premises at March 31	104,737	107,017	2,280	—
Total number of ordinary meters fixed or on consumers' premises at March 31	94,641	96,474	1,833	—

Sale of Gas Shares at Colchester.—On Wednesday, May 21, Messrs. Fenn, Wright, & Co., in conjunction with Messrs. T. D. Brook & Son, on instructions from the Directors of the Colchester Gas Company, offered for sale by auction £4000 6 p.ct. preference stock and 100 new shares of £20 each. The sale occasioned considerable interest. The lots were quickly disposed of at very satisfactory prices; the new shares making from £30 2s. 6d. to £30 5s.; and the preference stock realizing from £105 to £106 5s. The nominal amount of the stock and shares was £6000, and realized the satisfactory figure of £7228.

GAS REGULATION ACT ORDERS.

The Director of Gas Administration has forwarded copies of the following further Orders made by the Board of Trade under section 1 of the Gas Regulation Act.

Dundee Corporation.

After the declared date the words "2·4d. per therm" shall be substituted for the words "1s. per 1000 c.ft." in section 10 (price of gas within extended limits, and when sold in bulk) of the Dundee Gas Amendment Act, 1872. (May 26.)

Inverness Corporation.

After the declared date, the maximum price in respect of gas supplied by the undertakers shall be 16·8d. per therm. (May 26.)

Lanarkshire County Council.

The Order is in the usual terms, but without the inclusion of any price figure. (May 28.)

GAS REGULATION ACT APPLICATIONS.

There has appeared in the "London Gazette" the following further notice regarding applications to the Board of Trade under the Gas Regulation Act.

SPECIAL ORDER.

Skegness Urban District Council.

It is the intention of the Council to apply to the Board of Trade, under the provisions of section 10, for an amendment of the Skegness Urban District Gas Act, 1915, by deleting the following words from section 23, sub-section 2, of the said Act, "nor shall they sell any such gas-fittings as aforesaid except through a contractor," and to make provision with regard to the construction and placing of pipes, &c., between mains and meters.

MONTEVIDEO GAS AND DRY DOCK COMPANY, LTD.

The Fifty-Second Ordinary General Meeting of the Company was held last Wednesday at Dashwood House, New Broad Street, E.C.—Mr. CHARLES HUNT in the chair.

The SECRETARY (Mr. Henry Kearns) read the notice convening the meeting, and the minutes of the last meeting were taken as read. The Auditors' certificate was read; and the Directors' report and the statement of accounts were taken as read.

The CHAIRMAN, in moving their adoption, reminded the proprietors that, in discussing the results of the working at the last meeting, reference was made to the lean profits of the Dock department. He little thought at that time that the current year was to prove a still leaner one. In fact, they had to go back as far as 1911 for such a poor revenue as that which they now had to record. The revenue last year was actually £9460 less than that of the previous year; but happily the prospects were now more encouraging. Fortunately the Gas Department held its own, and in fact showed a small increase in the gas sold of 0·63 p.ct. for the year; and this would have been greater had they been able to supply the gas, since actually the number of meters in use was increased during the year by 5·85 p.ct. The consumption of gas was, however, handicapped by the incapacity of the plant—their difficulty in this respect having been increased by a severe storm which swept the coast, and did material damage to the works, which had now been all but rectified. Their Manager, Mr. J. N. Whyte, had been indefatigable in his exertions to increase the efficiency of the works; and though it would be some little time before everything was installed to meet their increasing business, they had every confidence in the future, so far as the gas supply was concerned. Already their gas sales for the first quarter of this year showed an increase of 5·54 p.ct. He wished they could express the same confidence as regards the rate of exchange. This unfortunately continued to be a heavy drain upon profit. The average value of the dollar last year was only 41d., as compared with 43d. in the previous year, which involved them in a loss of £19,344, which was equal to a dividend of 3½ p.ct. With regard to the additional plant required to meet the increased sales of gas, already they had shipped to Montevideo apparatus which had been installed, and materials for an extension of the carbonizing plant and purifiers, the work on which was well advanced. They were also dealing with an enlargement of several of the distributing and trunk mains; and it had become necessary to erect a new gasholder of double the capacity of their existing holders. It would be realized that this was the explanation of the increase of expenditure on capital account of £10,843. They had had to dispose of all their saleable securities, and since the date to which the accounts were made up, to make an arrangement with their Bankers for a temporary loan, against which they had lodged with them as security £52,250 of their perpetual first mortgage debenture stock. The time had now arrived when more capital was an absolute necessity, if the Company were to continue to grow and expand. He might perhaps remind them of what had been done in the past to bring about the great improvement in the position of the undertaking. When the Government adopted electricity about thirty years ago, they had left the Company poor indeed, by taking away from it nearly the whole of the street lighting, which was at that time a very important source of revenue (about one-third of the total); and eventually the whole of the street lighting was replaced by electricity. In the endeavour to cope with this unfortunate position, in 1902 they sent out a representative of a Continental stove manufacturing company who had at that time established a connection in South America, to give lectures and demonstrations on cooking by gas, which resulted in an installation of 23 cookers. Of these 23, nine were returned, leaving the Company with 14 at the end of that year. So little success did their efforts meet with in those early days, that at the end of the first ten years—viz., in 1912—only 2216 cookers and gas heating appliances were in use. Since then, however, their efforts had been more successful; and the use of gas both for cooking and for other purposes might be regarded as having been firmly established. For example, in the succeeding five years—from 1912 to 1917—the number of such appliances in use had grown from 2216 to 4409, while in the next five years—from 1917 to 1922—the number had increased to 6630, and it continued to be added to at the rate of rather more than 500 per annum. The full effect on gas sales was shown in the report, which gave the increase since 1902 as 249·92 p.ct. This was mainly for heating and industrial purposes, the quantity used last year for lighting being negligible. He had heard the case of one gas company which, some years ago, was snuffed out by electricity, and this happened in South America. But who had heard of a gas company enduring for a quarter of a century the competition of a State-owned electricity undertaking—with all its advantages of popularity and position, operating also 7000 miles away from its base—and at the end of it all rising stronger than ever—stronger in the number of its consumers, and stronger in its capacity to administer to the comfort and convenience of every household? And if it be asked whether this exceptional position had not been secured at the cost of advantage to consumers as to price of gas, the answer could be given by comparing their price to-day (10s. 10d. per 1000 c.ft.) with that of other larger gas companies operating in South America. It might be pointed out, moreover, that, whereas the capital expenditure of the Company in the Gas and Dock Departments was £600,446 in 1900, when they were only selling 66,783,000 c.ft. per annum, it was now only £558,270 with an annual sale of gas of 247,748,000 c.ft.—showing a decrease of £42,175, notwithstanding the increased sales of about 180,000,000 c.ft. per annum. They had been led to believe that, when the enlargement of the plants and mains was completed, the present rate of progress would be fully maintained, or even improved upon. He might state further that they had under consideration the terms upon which the new capital could be raised. These might take the form of debentures redeemable at par in about 30 years or less; but if they found in the Company's interest that it was not desirable to make a public issue, they would endeavour to arrange that any application from their stockholders should have consideration.

Mr. JOHN MEWS, LL.D., seconded the motion for the adoption of the report and accounts.

Mr. R. W. WESTERN asked why, in view of the fact that the supply of gas was not equal to the demand, the Board had not increased the price at which the gas was sold.

The CHAIRMAN replied that this matter had been well considered. It did not follow, of course, that if the charge were increased the demand would be as great. Experience belied this. They must also bear in mind that there was keen competition from the State-controlled electricity undertaking—an important factor bearing on the question of any increase in gas charges.

The resolution was then carried unanimously.

Proposed by the CHAIRMAN, and seconded by Mr. FRANK H. JONES, a dividend was declared, payable on June 2, of 2 p.ct. free of income-tax, making with the interim dividend a total of 4 p.ct. for the year.

The retiring Directors (Mr. Frank Jones and Mr. Edgar Horne) were then re-elected on the motion of the CHAIRMAN, seconded by Mr. T. F. LANE.

The Auditors (Sir Lawrence Halsey and Mr. W. C. Sneath) were unanimously re-elected, on the proposition of Mr. COOPER, seconded by Mr. R. W. WESTERN.

Thereafter, the CHAIRMAN proposed a hearty vote of thanks to the whole of the Company's staff for their excellent services throughout the year. The motion was supported by Mr. C. C. MALLET, who coupled in the vote the Chairman, the Directors, and Mr. Henry Kearns, their indefatigable Secretary, whose work, he assured them, was fully appreciated by all the shareholders.

The CHAIRMAN'S and Mr. KEARN'S acknowledgment concluded the proceedings.

WATFORD AND PINNER GAS ORDERS.

Reports are in hand, but unfortunately have to be held over, of inquiries held last week by Mr. H. C. Honey into the applications for Special Orders by the Watford Gas and Coke Company, and the Pinner Gas Company, Ltd.

The main object of the Watford Order is to confirm an agreement made between the Company and the Rickmansworth Urban District Council for the supply of gas in bulk by the Company to the Council for a period of 21 years. There was opposition to this by the Rickmansworth Trades Council and Labour Party, the Hertfordshire County Council, the Watford Corporation, and the Metropolitan Railway Country Estates, Ltd.

The draft Order of the Pinner Company contains provisions for the issue of new capital, and the authorization of additional borrowing powers, the erection of additional gas-works, &c. It also deals with dividends, &c., and contains a number of provisions relating to the laying of mains, disconnection of supplies, removal of fittings, &c. There was opposition from the Middlesex County Council, the London, Midland, and Scottish and the London and North-Eastern Railway Companies, and from the Hendon Rural District Council.

Dover Gas Price Reduction.—The Dover Gas Company are making a further reduction in the price of gas from 12½d. to 12d. per therm (equal to 4s. 9d. per 1000 c.ft.), as from the Midsummer meter readings. As showing the rate at which the Company have been bringing down the price, it may be pointed out that in January, 1921, the charge was 8s. 3d. per 1000 c.ft.

New Capital Issues.—Particulars will be found in our advertisement columns of two new issues of capital being made by Messrs. A. & W. Richards, of No. 37, Walbrook, E.C. On behalf of the Directors of the Bognor Gas Light and Coke Company, there is offered for sale by tender £13,000 of 6 p.ct. redeemable debenture stock, and for the Hatfield Gas Company, Ltd., £2998 of 6 p.ct. redeemable mortgage debentures, and 300 £10 ordinary shares.

SOUTH AFRICAN LIGHTING ASSOCIATION, LTD.

The Thirty-Fifth Ordinary General Meeting of the Association was held last Wednesday, at the London Offices, No. 90, Cannon Street, E.C. Mr. WILLIAM CASH, F.C.A. (Chairman of the Association), presided.

The SECRETARY (Mr. William Cash, Jun., M.A., F.C.A.) read the notice convening the meeting, the minutes of the last meeting, and the Auditors' report.

THE CHAIRMAN'S REMARKS.

The CHAIRMAN, in moving the adoption of the Directors' report and accounts for the year ended Dec. 31, 1923 (which were taken as read), said there was nothing very special to refer to in connection with the history of the Association during the past twelve months. The report began by stating that the profits for 1923 were smaller than they were in 1922; but he would remind the shareholders of what he had mentioned a year ago—that the profits in 1922 showed a very substantial advance on those of 1921. What it really came to was that they were back again in 1923—so far as their profits were concerned—almost exactly to the position in 1921. It would be seen that the Directors recommended a dividend of 7 p.ct. for the year 1923, which compared with 8 p.ct. a year ago; but in 1921, with slightly smaller profits than in 1923, they had paid a dividend of 7½ p.ct. In 1921, however, they had had to draw on their carry-forward to the extent of over £900; whereas in 1923 they only drew on the carry-forward to the extent of something under £500.

It would probably be interesting to consider the question as to why the profits in 1923 were not up to the standard attained in 1922. The Association had expended a considerable amount both on mains and meters, and, further, the actual sale of gas at Port Elizabeth in 1923 showed a small decrease—something over 5 p.ct. At Grahamstown, however, there was a small increase in output, represented, in money, by some £300. At Port Elizabeth they had not done quite so well with coke, although tar had been rather better. They had also made a satisfactory profit there on the fittings business during the past year. There had been no alteration in the price of gas at either station; but the coal costs had been more. Expressed as a price per 1000 c.ft., it meant about 2d. in Port Elizabeth and about 3d. in Grahamstown. The year had not been unsatisfactory as regards the sale of appliances. In Port Elizabeth there were over 200 additional stoves and geysers in use; but the lighting consumption had not been so good as previously. They had put on a small number of new stoves at Grahamstown, and they had had the satisfactory result of obtaining some 70 new consumers. At Port Elizabeth the number of consumers over the whole year had shown a decrease. As the shareholders knew, in these towns a good deal depended on the state of trade. He had told them a year ago that the state of trade there was "none too satisfactory;" and this had had a somewhat adverse effect on the results during the year 1923.

The main thing which had been troubling the Directors, and which was specially referred to in the report, was the high percentage of unaccounted-for gas at Port Elizabeth. It had reached a figure which was far too high, and unfortunately, in spite of the expenditure which they had incurred in trying to deal with this matter, they were back again to the position as it was in 1921. There was some improvement in 1922, but the shareholders might readily imagine that this was still giving the Directors a considerable amount of trouble and anxiety. In London they had the advice of Mr. J. F. Scott, a well-known engineer; and he had been in continual correspondence every week with the officials at Port Elizabeth, who were as concerned as the Directors at the present position.

METER TROUBLES.

During last year they had sent out a skilled repairer to deal with the question of meters, which had been giving a certain amount of trouble, due, possibly, in a measure, to the fact that all the repairs which would have been carried out normally from year to year got somewhat into arrears in consequence of war conditions; but he was bound to confess that, having overhauled a great proportion of the meters, they were not getting any substantial advantage from the expenditure incurred at the present moment. They had had a good many meters not registering gas, and, while they had tried all they could to recover sums reasonably due from their consumers, of course, they undoubtedly had suffered loss in this respect. He need hardly say that their Manager had applied other tests, such as the night test on the mains, and he had examined the plant, and so forth. He had also told them that sewerage operations in the town had caused the Association some amount of loss. Again, their Manager had been engaged in cutting-off old services; but still the position was one which the Board could not regard as satisfactory, and it was causing them a considerable amount of trouble and worry. During the past year Mr. T. N. G. Jennings (a Director) had had to go to South Africa on other business, and had visited Port Elizabeth in order to discuss this matter with the officials of the Association. Mr. Jennings was convinced that the local engineer had this matter very much on his mind, and was making every effort to get to the bottom of the trouble. Up to the present, however, the position had not been materially improved. They had had some trouble, in days gone by, with tampering with meters, but could not, at the present moment, say definitely that anything of that sort was going on. They had had a special report from the Auditors in Port Elizabeth, who had examined the method of recording and dealing with the sales of gas, and they had assured the Association that the methods and the system adopted were all that could be desired. Therefore, there was no loophole there, so far as they were aware, which could account for the trouble. The Board had decided, in these circumstances, to have a special visit paid to Port Elizabeth by an experienced engineer, to see whether anything could be done on the spot to assist the local Manager in regard to this difficulty; and he could only express the hope that this would be of material assistance, and that a year hence he might be able to tell the shareholders that something definite had been done in this direction and had brought about some real improvement.

THE BALANCE-SHEET.

Turning to the balance-sheet, it would be seen that they were continuing the system of building-up a reserve for retort renewals, when the retorts were due for repair. The little fund they had created had been added to during the year by a net sum of £754, so that they would not again be in the position, he hoped, that arose in 1921, when heavy expenditure in this respect had fallen upon them, and had adversely affected the position at that date. On one or two occasions reference had been made to the value of their investments. These had improved in value, and the market price to-day was over £900 in excess of the book value. Shareholders would be glad to know that the position in this respect was satisfactory.

THE OUTLOOK.

So far as the trade position in Port Elizabeth was concerned, there was some talk of harbour improvements, which might have a very material effect on the prosperity of the town if the authorities decided to proceed with them. The latest reports went to show that trade was rather better in South Africa, and that some new businesses were being started. With regard to Grahamstown, the Association's business there was much smaller than in Port Elizabeth. The position there was that an electricity undertaking would come into operation during the present year; and the Corporation were making very strenuous efforts to induce people to have their houses wired. They were providing free services, and asking for support for the municipal undertaking, in order that no loss might fall on the rates. The Association, of course, as ratepayers, sincerely hoped that no loss would fall on the rates. From such information as they had, however, it looked as though the price of current would be a substantial one; and whether the inhabitants would be prepared to spend money in having electricity brought into their houses, it was too early to say. But undoubtedly the Association would have to face this competition, and would, perforce, lose the public lighting, as he had intimated a year ago. They, therefore, could not expect that the profits at Grahamstown, at all events in the immediate future, would be as large as they had been in the past. In conclusion, he said they had always been a conservative company. They had no hesitation in recommending the dividend of 7 p.ct., although it did mean drawing a little on the carry-forward; but this existed for the purpose, and even after paying this dividend they would carry forward £3993 to the year 1924. This was not an unsubstantial amount, having regard to the issued share capital of £90,000. So that, although the Directors had not such a glowing account to put before the shareholders as they had had on some other occasions, he hoped they would not be altogether dissatisfied with the results for 1923.

Mr. HENRY WOODALL, M.Inst.C.E. (Senior Director), seconded the adoption of the report and accounts.

Mr. F. R. SMITH (a shareholder) congratulated the Board on their decision to send out a trained engineer to investigate the question of unaccounted-for gas. He knew it had been a source of great anxiety to the Board for some time past, and he considered they had acted very wisely in their determination to send out somebody who could investigate the matter on the spot and find out really where the gas was going to. Otherwise, he considered the report a very satisfactory one, and was of opinion that the shareholders ought to be much indebted to the Board for the trouble they had taken in looking into the matter he had mentioned.

Mr. A. J. KINGDON asked what was the quantity of gas sold in Port Elizabeth and Grahamstown.

The CHAIRMAN said the amount sold at Port Elizabeth last year was nearly 58 million c.ft., and at Grahamstown a little over 24 millions.

Mr. KINGDON asked whether the main tests were satisfactory.

The CHAIRMAN replied that the main tests were not completely, but very nearly, satisfactory. The local Manager's view was that in some way the trouble was mainly due to the state of the meters, and this had been his view all through. The Board were rather puzzled about it; and they thought that a fresh mind might attack the matter from another viewpoint and obtain different results. At all events, they thought Mr. Donaldson (the Manager) might be glad of some help out there in this direction.

The report and accounts were carried unanimously.

The CHAIRMAN then moved that a dividend of 7 p.ct. for the year 1923, subject to the deduction of income-tax at 1s. 7½d. in the £, and less the interim dividend of 3 p.ct. already paid, be declared. The 1s. 7½d. was the figure agreed with the authorities after making the proper allowances for Colonial taxes already paid on the other side by the Association. The advantage of this arrangement was that it made a dividend of very nearly 8 p.ct., calculated as an English dividend with the full tax deducted. The shareholders were given the vouchers on the back of the dividend warrants, so that they could make out their claim in the proper form. In calling upon Mr. Jennings to second the resolution, the Chairman said it had been a great advantage to the Association to have him on the Board. He had been in residence at Port Elizabeth for several years, and his presence on the Board gave them a link with their local officers. Mr. Jennings did not pretend to have any technical knowledge of gas manufacture, but with his business experience it was a great advantage to the Association to have had him visit the works and discuss matters with the local officers.

Mr. T. N. G. JENNINGS, in seconding the resolution, said that he had to go to South Africa on other business, and had taken the opportunity of going to Port Elizabeth and meeting the Manager and Secretary there, and looking into things as far as he could. He had found both the Association's representatives still very exercised about the unaccounted-for gas. It was worrying them a lot; but, in his opinion, they were both doing all they could to discover the cause, though unfortunately, up to the present, they had not been successful. He had gone all over the works and all through the whole process with Mr. Donaldson, and had put all the points before him that he could think of which might help him to put his finger on the trouble, and he believed, from the answers he had obtained, that everything possible was being done. On his return he had reported to his colleagues, and had expressed his views, and the Board had come to the conclusion that the time had arrived for an experienced man with a fresh mind to

go out and examine the whole thing. He hoped that before long they would have better results. As regards trade, South Africa had been through a bad time. Things are better than they were, though not yet normal; but they were gradually improving, and he considered that the Association should see the result of that in their own returns. Port Elizabeth was certainly making progress, though not very rapidly. He had seen several blocks of flats which had been erected since his visit twelve months previously. The new suburb of Humewood was going ahead, and two large hotels were being built. The foundations of one of them were being put down when he was there, and he was told that the other would follow very shortly. The Association would get new business from them, he had no doubt. Factories, also, were on the increase; and the Ford motor car people had decided to put up large businesses in Port Elizabeth. They had two representatives there organizing them; and they would assemble there all their cars for use in Africa. This also might bring the Association business, because even if the Ford people did not require a supply of gas at their works, the workmen would want a supply in their homes; the firm must employ white men for supervising and organizing. As to the harbour works, the Government were engaged in putting out a long breakwater from the south end; and when they got this arm completed, it was their intention to put out another arm from the shore near the site of the gas-works. It was hoped that these improved facilities for shipping would largely increase the trade of the port, and if they did it must be to the advantage of the Association. He believed that, once the Association got the question of unaccounted-for gas in hand, with the improved prospects of the town, both from a residential and a trade point of view, they should look forward to better times.

The resolution was carried unanimously.

On the motion of the CHAIRMAN, seconded by Sir CHARLES JESSEL, Bart., Mr. Jennings, who retired from the Board by rotation, was unanimously re-elected.

Mr. PERCIVAL D. GRIFFITHS, F.C.A., was unanimously re-elected Auditor, on the motion of Mr. F. R. SMITH, seconded by Mr. A. J. KINGDON.

The CHAIRMAN proposed that the meeting should place on record their thanks to the local officers for their work during the past year. Though it had not been such a successful year as some had been in the past, it had been a worrying year to the officers.

Mr. KINGDON seconded.

The vote of thanks was carried unanimously.

Mr. F. R. SMITH, proposing a vote of thanks to the Board, said they also had had a worrying time. The shareholders were sure that the Directors had the interests of the business at heart, and were doing their best in difficult times.

Mr. KINGDON seconded, and the vote was accorded unanimously.

The CHAIRMAN, on behalf of himself and his colleagues, returned thanks; and the meeting closed.

Therm System of Gas Charge in Scotland.

The annual meeting of the District Executive Board for Scotland of the National Gas Council was held on May 20, in the City Chambers, Glasgow—Councillor Stewart, Convener of the Edinburgh Corporation Gas Committee, presiding. There was a large attendance of representatives of municipal and private gas undertakings. With reference to the Gas Regulation Act, 1920, requiring any local authority or company authorized to supply gas by any Act of Parliament to adopt the Act, the Chairman explained that at the last annual meeting the proposal was unanimously agreed to that municipalities owning gas-works in Scotland be advised to take early steps to adopt the Act, and to apply the therm system of charge for gas on May 15, 1924. It has been found that town councils have been slow in making application for Orders; and the Director of Gas Administration has intimated that it might be necessary to issue an Order in respect of each undertaking. At the same time, the Board of Trade expressed the hope that each town council will see their way to make the necessary application at an early date. It was intimated that 4 companies and 27 municipalities in Scotland had obtained or applied for an Order. The meeting gave attention to the Electric Lighting (Scotland) Act, 1890, passed at the time of the inception of electric supply. The Act applies to Scotland only, and has the effect of authorizing a town council which owns both the gas and electricity undertakings to meet out of the receipts for gas any deficit on the working of the electricity undertaking. The meeting unanimously approved of definite steps being taken with a view to securing an amendment of the Act.

Dublin Gas Supply Resumed.

The strike of the workers of the Alliance and Dublin Consumers' Gas Company, which extended fifteen days, concluded last week; and the gas service of the city and district was resumed on Monday last. It may be recalled that the strike originated in the men's protest against the demand that a clerk who had been promoted to a collectorship should give up his membership of the Transport Workers' Union. On his refusing to do so, he had been assigned his former task. The men then called for his reinstatement in the higher position, but this was declined. Ordered by the Union Executive to return to work pending inquiry, and, if possible, arbitration at the instance of the Free State Government, the workers failed to obey, and were thereupon deprived of strike pay and their attitude repudiated. This led to a split in the Union ranks, and rendered it obvious that, in view of suffering and distress among their families, the strikers would have to return. No terms of settlement were disclosed, but it is understood that the clerk who had been promoted collector is to hold his original post, but with increased pay.

The Effects of the Week-End Rain.—There are some remarkable results following the phenomenal floods due to the terrific rainstorm of the week-end—lasting in some cases for thirty-six hours. In Worcester the gas works were inundated; at Bromyard the water entered the gas-works and put out the fires; and the same thing happened at the Fazeley Gas-Works (Staffordshire).

FLUELESS GAS-STOVES.

A Report upon an Investigation.

A Joint Committee of the Society of Medical Officers of Health and the Royal Sanitary Institute, appointed to consider the use of gas-stoves for domestic and workshop heating where no provision is made for the escape of flue gases, have issued their report. The Committee consisted of the following: Representing the Society of Medical Officers of Health—Prof. H. R. Kenwood, C.M.G., Dr. D. C. Kirkhope, Dr. F. N. Kay Menzies, and Dr. E. H. Snell. Representing the Royal Sanitary Institute—Prof. A. Bostock Hill, Dr. J. S. Owens, Dr. L. C. Parkes (*Chairman*), Mr. J. Osborne Smith, F.R.I.B.A., and Mr. H. D. Searles Wood, F.R.I.B.A. Their report is as follows:

Five meetings of the Committee were held; the average attendance being six. Correspondence has taken place between the Committee and the Chief Inspector of Factories, Home Office. (See Appended Papers "A").

The Medical Research Council was approached on the question of the Council undertaking an investigation on the experimental side into the effect upon health of the use of flueless gas-stoves. A letter was received on Sept. 13, 1923, from Sir Walter Fletcher expressing the opinion that no case had been made out for new research work on these lines. "Flueless stoves, of course," writes Sir Walter, "should be prohibited in the absence of thoroughly satisfactory ventilation; given proper ventilation, it does not seem worth while to hunt for any possible additional and unknown chemical dangers to health beyond those which are a matter of common knowledge."

Owing to the kindness of Medical Officers of Health, much valuable information on the use of flueless gas-stoves has been received from large cities.

City of London.—Dr. Howarth writes (April, 1923) that there is no considerable use of these stoves in City workrooms; but they appear to have increased in number during the past winter. Ten answers to a questionnaire submitted are returned. In nine of these workshops, where flueless gas-stoves are used, the conditions appear to be good, the health of the occupants unaffected, and the output of work normal. In general, there is no objection on the part of the workers to the use of these stoves, and probably the large size of the rooms, the constant change of air and adequate ventilation, are sufficient to diminish any ill-effects that might arise in less favourable circumstances. In one case complaint was received; but here there was a flue 2½ in. in diameter; the windows, however, were never opened.

City of Glasgow—See Appended Paper "B."

City of Liverpool—See Appended Paper "C."

City of Nottingham—See Appended Paper "D."

City of Leeds—See Appended Paper "E."

Metropolitan Borough of Stepney—Dr. Thomas reports that flueless gas-stoves are not in use in the workrooms, schools, cinemas, and dwelling-houses in the borough.

Dr. Louis Parkes reports that he has had a Lawson flueless gas-stove in use in a room of his house for a year, and that no unpleasant results are noticeable if the window is kept slightly open when the stove is in action. If the window is closed, even though there is an open fireplace and chimney, the air becomes oppressive, and liable to set up drowsiness and discomfort.

Dr. J. S. Owens has submitted a very valuable report on "Flueless Gas-Fires from a Hygienic Aspect," which the Committee submit herewith. (See Appended Paper "F.")

The Committee desire to draw special attention to the summary of conclusions at the end of the report, with which they are fully in agreement.

From the evidence submitted to them, the Committee are of opinion that, while there is little or no evidence of any injurious effects upon health by the use of these flueless gas-stoves under ordinary conditions—*i.e.*, where the rooms are of fair size, sufficiently ventilated, and not overcrowded—there is always an element of risk of the escape of CO into the room, as pointed out in (*e*) and (*f*) of Dr. Owens' summary. Admitting that the amount of CO_2 present in the air of a room heated by a flueless gas-stove is never likely to rise to the 3 p.ct. which induces hyperpnœa, still the presence of SO_2 in the air, the raised temperature combined with stagnation of atmosphere, the over-dryness of the air in many cases (diminished relative humidity due to increase of temperature), and the stuffy smell due to carbonization of organic matter in the air, are all conditions which may arise where bad ventilation and lack of supervision exist. The constant breathing of such an atmosphere must in time affect the health of the occupants, and in the case of workshops is likely to lower the output and depreciate the quality of the work.

There is also the danger that if the stove-tap is turned down, a variation of pressure in the supply (caused by the turning on of other stoves or appliances, or by the reduction of pressure in the main) may cause the burner to "light back;" and in this case the result would be more serious if there were no flue-pipe to the stove.

CONCLUSIONS.

So convinced are the Committee of the absolute necessity of a very free ventilation existing where flueless gas-stoves are in use that—bearing in mind the usual absence of this free and effective ventilation in living rooms, bedrooms, workrooms, &c.—they think it desirable to discourage the introduction of these stoves, and to express the opinion that their use can only be justified in such places as entrance halls, passages, landings, &c., where ventilation is free, and where occupants do not remain for any considerable length of time.

In support of this conclusion, it may be noted that for more than thirty years it has been one of the rules of the Royal Sanitary Institute that no stove in which heat is produced by combustion of gas, coke, or charcoal may be admitted to the exhibitions of the Institute unless it is designed for use with a flue. (Signed) LOUIS C. PARKES, Chairman.

[The various appendixes referred to in the foregoing will be noticed in subsequent issues.]

ISLE OF THANET GAS COMPANY'S CENTENARY CELEBRATION.

A Joyous Time at Margate.

The Isle of Thanet Gas Light and Coke Company (who supply Margate), having been incorporated in 1824, celebrated their centenary last Wednesday in fit and proper manner. In the afternoon there were sports in Dreamland Park, which were patronized by over 300 wives and children of men in the Company's employ, for whom tea was provided in the Garden Café; and in the evening there was a dinner (at which about 200 sat down) and entertainment at Dreamland. All the functions proved extremely enjoyable; the entertainment, which was entirely provided by the staff and employees of the Company, affording opportunity for the display of a large amount of talent, and including an original play entitled "S.O.S. and Sauce," by Mr. J. M. Campbell, the Engineer and General Manager. During dinner, the Chairman (Mr. Walter Hills) was presented with a gold cigarette case by his fellow-Directors, the Engineer, and the Secretary. Gifts were also bestowed upon two employees of over fifty years' service, and seven others who had been with the Company for over forty years. Each received a cheque for £5, and the two oldest servants a handsome clock in addition.

The chair at the dinner was occupied by Mr. Walter Hills, who was supported by the Mayor and Mayoress of Margate (Councillor and Mrs. Venner) and Directors and officials of the Company, including Mr. Campbell and Mr. A. J. Stickels (the Secretary).

The toast of "The Isle of Thanet Gas Light and Coke Company" was submitted by the Mayor, who said that the Company separated from Ramsgate (which at one time they supplied) in 1877. When gas was first sent out, he found from the statistics of the Company that the price was 15s. per 1000 c.ft., and just before the war it was only 2s. 4d. The Company started with the very small capital of £16,000, but were now capitalized at £150,000. This showed how successful the business had been. He had lived in the town a good many years, and had never heard any of the men working for the Company complain of the treatment they received. When the Company started, the wages account amounted to £279 in the year. Now the yearly wage bill was £30,000. The Company had a splendid man in their Engineer and General Manager (Mr. J. M. Campbell), a man who took not only the keenest interest in the Company's affairs, but in the men's welfare, and who would do his best for everyone. Mr. Campbell was also recognized as a keen business man. In conclusion, he proposed the health, prosperity, and success of the Company, coupling with it the Chairman, Directors, staff, and employees, who all deserved thanks for making the Company such a great success.

In his response, Mr. Walter Hills said the Directors heartily welcomed all who had met there that day to commemorate the centenary of the undertaking, which was incorporated by an Act of Parliament that received the Royal Assent on May 28, 1824.

Mr. W. B. Reeve, J.P. (a Director), proposing the health of the Chairman, declared that no body of men could have a more sympathetic and kindly Chairman than Mr. Hills, who was deeply respected by his fellow-Directors.

An admirable brochure was prepared for the occasion, and some extracts will be taken from this for a future issue.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate of Ammonia.

LONDON, *June 2*.

There is very little business passing in the London tar products market. Pitch for next season's shipment is a matter of interest; but the question is: What price will sellers and buyers agree upon? No one can say at present. In fact, the movements of the franc are disturbing to all concerned. For prompt delivery the value is about 56s. 6d. net f.o.b. Creosote is dull; the nominal value being about 8½d. per gallon. Motor benzole is unchanged.

Tar Products in the Provinces.

June 2.

There has been little alteration in tar products during the past week. Pitch is quiet, and there does not appear to be much demand from the Continent at present. There are one or two buyers, but their offers appear to be below those of the manufacturers on this side. Creosote is quiet, and there is little or no business doing. Carbolic still remains dull, with very small demand.

The average values for gas-works products during last week were: Gas-works coal tar, 50s. to 55s. Pitch, East Coast, 59s. to 61s. 6d. f.o.b. West Coast—Manchester, 55s. to 57s. 6d.; Liverpool, 56s. to 58s.; Clyde, 57s. to 59s. Benzole 90 p.ct., North, 1s. 5d. to 1s. 6d.; crude 65 p.ct. at 120° C., 1s. to 1s. 1d. naked at makers' works; 50-90 p.ct., naked, North, 1s. 8d. to 1s. 10d. Toluole, naked, North, 1s. 5d. to 1s. 6d., nominal. Coal tar crude naphtha in bulk, North, 7¼d. to 8d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 5d. Heavy naphtha, North, 1s. 2d. to 1s. 3d. Creosote, in bulk, North, liquid, 7¼d. to 7½d.; salty, 7d. to 7¼d.; Scotland, 6½d. to 7d. Heavy oils, in bulk, North, 9d. to 9½d. Carbolic acid, 60 p.ct., 2s. 1½d. to 2s. 4½d. prompt. Naphthalene, £15 to £16; salts, £6 to £8, bags included. Anthracene, "A" quality, 4d. per minimum 40 p.ct., purely nominal; "B" unsaleable.

According to the annual returns, the Blackpool Gas Department have eclipsed all previous records. The estimated profit for the past year was £6215, while the actual profit amounted to £29,322.

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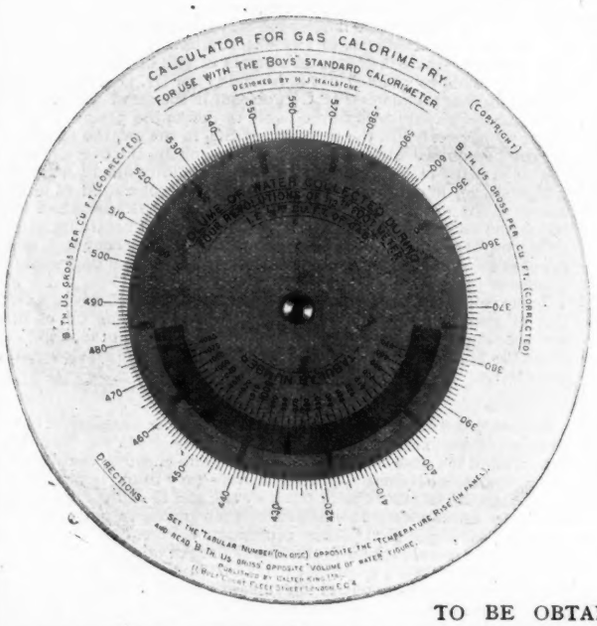
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(*See Article in "JOURNAL," May 21, p. 523.*)

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STOCK MARKET REPORT.

THERE was no change in the nature of Stock Exchange business last week. Government securities continued in demand; dealings in the speculative market being confined to a few special investments. The payment on June 2 of the 5 p.ct. War Loan interest, amounting to about £50,000,000, is expected by dealers in the gilt-edged market to bring about further investment in these securities. The new issues are receiving most attention, and in spite of rumours to the contrary the big ten million Australian Commonwealth Loan was placed without resort to the underwriters, and the Beecham Estate issue was an instantaneous success.

The Industrial Market was surprised at the announcement of the forthcoming issue of five million 7 p.ct preference shares in Lever Bros., resulting in a sharp fall in the two leading classes of the Company's shares; but the prices have all but recovered. Generally, business was at a low ebb, and the twenty-one day account did not tend to relieve the depression.

The weakness of the exchanges imparted a dull tone to the Foreign Market, although movements in the quotations were not extensive. In the Industrial Market, Iron, Coal, and Steel shares continued in a state of stagnation, and, though there were no violent movements, the general trend of the Gas Market, in the case of those companies, with one exception, whose quotations were altered, was in an upward direction. Imperial Continental are speedily recovering from the *ex* div. reduction of 15 points. Bristol max. advanced 2 points, and Tynemouth con. and new advanced 3 points on the local Exchanges.

The following transactions were recorded during the week:

On Monday, Bombay 5½ *ex* div., British 117½, 4 p.ct. debenture 75, Commercial 4 p.ct. 91, 91⅛, 93, 3½ p.ct. 91⅜, 92½, Continental Union 30, 7 p.ct. preference 82½, European 6½, Gas Light and Coke 94½, 94⅝, 95, 95¼, 95½, Hastings and St. Leonard's 5 p.ct. conv. 94, Imperial Continental 149, 149½, 150 *ex* div., Liverpool 7 p.ct. preference 105½, Ottoman 22s. 6d., Primitiva 7s. 6d., 7s. 7½d., 5 p.ct. preference 30s., South Metropolitan 99½, 100, 6½ p.ct. debenture 105, South Suburban 5 p.ct. debenture 99, 99⅜, Wandsworth 3 p.ct. debenture 59. Supplementary prices, East Grinstead 10 p.ct. max. "A" 129½, 130, Wandsworth 3½ p.ct. new ordinary 97½.

On Tuesday, Alliance and Dublin 4 p.ct debenture 63, Bristol 5 p.ct. maximum 92½, European £6 14s. 6d., Gas Light and Coke 94½, 94⅝, 94⅞, 94⅞, 4 p.ct. preference 82, Imperial Continental 149, 149½, 151, 152 *ex* div., South Metropolitan 99⅜, 100, Wandsworth 3 p.ct. debenture 60. Supplementary prices, Folkestone 80½, 81, Southend-on-Sea 5 p.ct. new "B" 89, 89½.

On Wednesday, Croydon max. div. 85, 86, Gas Light and Coke 94½, 3½ p.ct. maximum 63, 64, 4 p.ct. preference 81, 3 p.ct. debenture 63, Imperial Continental 151, 152, 153 *ex* div., Liverpool 7 p.ct. preference 104⅜, 105, Newcastle 83, 83½, Portsea Island "B" 104, 104½, Primitiva 7s. 6d., 5 p.ct. preference 30s., South Metropolitan 99½, 99⅝, 100. Supplementary prices, Petersfield and Selsey 5 p.ct. preference 40s.

On Thursday, Brentford 5 p.ct. preference 91½, Commercial 3½ p.ct. 93, Continental Union 28, Gas Light and Coke 94½, 94⅝, 94⅝, 3¼ p.ct. maximum 62⅜, 4 p.ct. preference 81, 81½, 81½, 82½, 3 p.ct. debenture, 62, Imperial Continental 151, 151½, 152½ *ex* div., Primitiva 7s., South Metropolitan 99⅜, 99⅞, Tottenham "A" 121, "B" 102½.

On Friday, Brentford "B" 99⅝, 5 p.ct. preference 91½, 91¾, British 119, 119½, European 6⅝, Gas Light and Coke 94½, 94¾, 94⅝, 94¾, 3½ p.ct. maximum 63½, 63¾, 63½, 4 p.ct. preference 81½, 82, 3 p.ct. debenture 62, 63, Imperial Continental 151⅜, 153 *ex* div., Primitiva 7s. 6d., 7s. 6⅜d., Sheffield "A" 97⅞, "B" 99⅝, South Metropolitan 6½ p.ct. debenture 103½, South Suburban 102, Tottenham "A" 122½, "B" 102, 102½. Supplementary prices, Eastbourne 5 p.ct. "A" 123½, Tuscan 6 p.ct. debenture 75, Wandsworth 3½ p.ct. new 99½.

Money was in good demand at Lombard Street on Friday, and, thanks to the banks, any end of the month stringency was absent. At no time was more than 3 p.ct. paid for fresh advances, and at the end balances were offered at 2 p.ct. Treasury Bills were allotted at the lower rate of £2 19s. 4·72d.

The disturbed state of European politics continued to depress the Foreign Exchange Market. French francs rose at one time to 83 25 and finally closed at 83. Belgian francs closed at 95⅞, Italian lire at 98$^{13}/_{16}$, and Dutch florins at 11.51⅜. An even more unsatisfactory feature is the fall in the dollar-sterling, which closed at 4.30¾, or about 4 cents down on the week.

The Silver Market remained strong, and the price for bars further advanced to 35d. per oz.

The Bank rate is 4 p.ct., to which it was raised from 3 p.ct. on July 5. Bankers' deposit rates are 2 p.ct. The deposit rates of the discount houses are 2 p.ct. at call and 2½ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. May 30.	Rise + or Fall − on Week.	Transactions Lowest and Highest Prices.
£			% p.a.	% p.a.				
131,978	Stk.	Feb. 7	5	5	Aldershot 5 p.c. max. C.	77—82	..	..
235,492	,,	,,	4	4	Do. 4 p.c. Pref.	68—73	..	..
1,551,868	,,	Apr. 3	5½	6	Alliance & Dublin Ord.	64—69	..	..
374,000	,,	Jan. 10	4	4	Do. 4 p.c. Deb.	60—65	..	63
180,000	5	May 22	8	8	Bombay, Ltd.	5—5⅛*	..	5⅛
100,000	10	Mar. 6	8½	8½	Bournemouth 5 p.c.	12½—13½	..	..
383,110	10	,,	7	7	Do. B 7 p.c.	12—13	..	..
115,000	10	,,	6	6	Do. Pref. 6 p.c.	11—12	..	..
50,000	Stk.	Dec. 28	3	3	Do. 3 p.c. Deb.	55—60	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb.	75—80	..	..
992,045	,,	Feb. 21	6⅛	6⅛	Brentford A Con.	97—102	..	..
990,500	,,	,,	3	6½	Do. B New	97—102	..	99⅞
76,000	,,	,,	5	5	Do. 5 p.c. Pref.	89—94	..	91⅛—91⅜
306,690	,,	Dec. 13	4	4	Do. 4 p.c. Deb.	76—81	..	..
181,337	,,	—	—	—	Do. 6 p.c. Rich. Red. Deb.	100—105	..	..
214,740	,,	Mar. 6	1⅛	1⅛	Brighton & Hove Orig.	170—175	..	..
244,200	,,	,,	8½	8½	Do. A Ord.	124—127	..	..
1,887,500	,,	Feb. 21	5	5	Bristol 5 p.c. max.	92—93⅛	+2	92½
835,000	,,	Mar. 20	—	7	British Ord.	117—122	..	117½—119½
100,000	,,	—	7	7	Do. 7 p.c. Pref.	120—125	..	..
120,000	,,	Dec. 28	4	4	Do. 4 p.c. Red. Deb.	73—78	..	75
100,000	10	May 22	6	8	Cape Town, Ltd.	6½—7½*	..	..
100,000	10	Apr. 24	4½	4½	Do. 4½ p.c. Pref.	6—7*	..	..
150,000	Stk.	Dec. 28	4½	4½	Do. 4½ p.c. Deb.	73—78	..	..
626,860	,,	Feb. 21	6	6	Cardiff Con. Ord.	97—99	..	..
237,860	,,	Dec. 28	7½	7½	Do. 7½ p.c. Red. Deb.	105—110	..	..
157,150	,,	Mar. 6	5	6½	Chester 5 p.c. Ord.	88—93b	..	..
1,513,280	,,	,,	6	6	Commercial 4 p.c. Cap.	90—95	..	91—93
560,000	,,	,,	6	6	Do. 3½ p.c. Cap.	90—95	..	91½—93
475,000	,,	Dec. 13	3	3	Do. 3 p.c. Deb.	57—60	..	..
800,000	,,	14 Jan. 15	—	—	Continental Union, Ltd.	28—33	..	28—30
200,000	,,	Dec. 13	7	7	Do. 7 p.c. Pref.	78—83	..	82½
660,000	,,	Mar. 6	6½	6½	Croydon sliding scale	101—104	■ ..	..
284,975	,,	,,	5	5	Do. max. div.	83—86	..	85—86
192,270	,,	Feb. 21	3	4½	Derby Con.	108—110c	..	..
55,000	,,	Jan. 12	4	4	Do. Deb.	74—76c	..	..
200,000	,,	Apr. 3	5	5	East Hull 5 p.c. max.	..	..	..
1,002,180	10	Jan. 24	5	2	European, Ltd.	6½—7½	..	6½—6⅝
16,503,045	Stk.	Feb. 7	5⅛	5⅛	Gas Light & Coke 4 p.c. Ord.	94—96	..	94½—95⅛
2,000,000	,,	,,	3⅛	3⅛	Do. 3½ p.c. max.*	61—64	..	62½—64
4,062,235	,,	,,	4	4	Do. 4 p.c. Con. Pref.	80—83	+1	81—82½
4,761,930	,,	Dec. 13	3	3	Do. 3 p.c. Con. Deb.	60—63	+1	62—63
130,000	,,	Dec. 11	10	10	Do. 10 p.c. Bonds	..	..	..
42,000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
82,500	,,	Mar. 20	6½	6½	Hastings & St. L. 5 p.c. Conv.	91—96	..	94
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	76—81	..	..
70,000	10	May 8	10	10	Hongkong & China, Ltd.	16—17	..	..
86,600	Stk.	Mar. 6	9½	10	Hornsey 7 p.c.	143—148	..	..
1,076,000	,,	May 22	10	30	Imperial Continental Cap.	150—155*	+5	149—153
401,400	,,	Feb. 7	3½	3½	Do. 3½ p.c. Red. Deb.	69—72	..	..
235,242	,,	Mar. 6	6½	6½	Lea Bridge 5 p.c. Ord.	95—100	..	..
2,127,340	,,	Feb. 21	5½	5½	Liverpool 5 p.c. Ord.	92—93b	+1½	92
600,000	,,	Mar. 20	7	7	Do. 7 p.c. Red. Pref.	103—106b	..	104½—105½
165,736	,,	Feb. 21	9	8	Maidstone 5 p.c. Cap.	124—129	..	..
63,480	,,	Dec. 28	3	3	Do. 3 p.c. Deb.	54—59	..	..
75,000	5	Dec. 13	7	5	Malta & Mediterranean	3⅛—3½	..	..
50,000	100	Apr. 1	4½	4½	Met. of Melb'rne 4½ p.c. Deb.	..	..	..
541,920	Stk.	Nov. 29	4	4	Montevideo, Ltd.	54—59	..	..
1,875,892	,,	Mar. 6	4⅞	5⅛	Newcastle & Gateshead Con.	84½—85½d	+½	83—85
1,150,166	,,	,,	4	4	Do. 4 p.c. Pref.	73—75d	..	..
529,705	,,	Dec. 28	3⅛	3⅛	Do. 3½ p.c. Deb.	71—73d	..	..
15,000	10	Mar. 6	11	11	North Middlesex 10 p.c.	16—17	..	..
75,940	10	,,	7$^{7}/_{16}$	7$^{7}/_{16}$	Do. 7 p.c.	11½—11¾	..	..
300,000	Stk.	May 8	9	7	Oriental, Ltd.	98—101	..	..
138,120	,,	Dec. 28	7¼	7¼	Plym'th & Ston'house 5 p.c.	117—122	..	..
60,000	50	Mar. 6	13	13	Portsea Island B	102—105	..	104—104½
100,000	50	,,	12	12	Do. C	98—103	..	..
1,450,345	5	29 Oct. 14	—	—	Primitiva Ord.	⅞—1	..	7/-—7/7½
2,459,800	5	30 Dec. 15	—	—	Do. 5 p.c. Pref.	1⅛—1½	..	30/-
341,400	100	Dec. 3	4	4	Do. 4 p.c. Red. Deb.	70—75	..	..
600,000	Stk.	Jan. 24	4	4	Do. 4 p.c. Red. Deb. 1911	54—57	..	..
220,335	,,	Dec. 28	4	4	Do. B. Aires 4 p.c. Rd. Db.	55—58	..	..
321,670	,,	,,	4	4	Do. R'r P'te 4 p.c. Rd. Db.	55—58	..	..
150,000	10	Mar. 20	6	6	San Paulo 6 p.c. Pref.	6½—7	+½	..
125,000	50	Jan. 2	5	5	Do. 5 p.c. Red. Deb.	39—41	..	..
270,000	Stk.	Mar. 20	5	5 5/8/4	Sheffield A	100—102e	−1	97⅞—100
419,968	,,	,,	5	5/8/4	Do. B	100—102e	−1	99⅞
1,047,000	,,	,,	5	5/8/4	Do. C	100—101e	−1½	100
90,000	10	Oct. 18	9	6	South African	7—9	..	..
5,093,895	Stk.	Feb 21	5	6½	South Met. Ord.	99—101	..	99½—100
102,580	,,	Jan. 10	5	5	Do. Red Pref.	98—100	..	..
1,595,445	,,	,,	3	3	Do. 3 p.c. Deb.	58—61	..	..
734,000	,,	Mar. 6	6½	6½	Do. 6½ p.c. Red. Deb.	103—105	..	103½—105
91,500	,,	,,	8½	8½	South Shields Con.	136—138d	..	..
1,087,795	,,	Feb. 21	6	6½	South Suburban Ord. 5 p.c.	100—105	..	102
368,837	,,	Dec. 28	5	5	Do. 5 p.c. Deb.	95—100	..	99—99¾
647,740	,,	May 8	6	5	South'mpt'n Ord. 5 p.c. max.	84—87	..	..
121,275	,,	Dec. 28	4	4	Do. 4 p.c. Deb.	74—79	..	..
250,000	,,	Mar. 6	7	7	Swansea 7 p.c. Red. Pref.	102—104	..	..
200,000	,,	Dec. 28	6½	6½	Do. 6½ p.c. Red. Deb.	102—104	..	..
120,000	,,	Feb. 21	8	8	Tottenham District A 5 p.c.	119—124	..	121—122½
382,275	,,	,,	6½	6½	Do. B 3½ p.c.	100—103	+1	102—102½
181,255	,,	Dec. 13	4	4	Do. 4 p.c. Deb.	77—81	..	..
258,251	,,	Mar. 20	5	7/14/4	Tynemouth Con. and New Wandsworth, Wimbledon, and Epsom—	87—89d	+3	88
30,000	,,	Mar. 6	9	9½	Wandsworth A 5 p.c.	132—137	..	..
355,636	,,	,,	7½	7½	Do. B 3½ p.c.	110—115	..	..
108,075	,,	,,	6⅞	6/7/9	Do. C	96—101	..	..
240,865	,,	,,	6$^{7}/_{16}$	6/7/9	New Ordinary	..	..	97½—99½
350,000	,,	,,	7½	7½	Wimbledon 5 p.c.	108—113	..	..
98,000	,,	,,	7½	7½	Epsom 5 p.c.	115—120	..	..
88,416	,,	Dec. 28	3	3	3 p.c. Deb.	56—61	..	59—60

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THE NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

Another wretched week has been experienced, and the outlook shows at present no signs of improvement. Reports were again to hand at the end of the week that the Ruhr dispute had been settled. Up to the present, however, the cessation of production there has not been a factor on this market at all; the hopes that buyers would have to come here for supplies having been completely falsified. So that the resumption of work can presumably make no difference.

Efforts to obtain export business by price-cutting seem to be of no avail, and counter offers always come back at lower figures, so that, except for contract orders, there is little or no trade passing. The offers that are received are in many cases at prices which would show greater losses than laying the pits idle, so that short time is becoming prevalent.

Wear Special gas coals are still by far the firmest spot, and the quote 24s. to 24s. 6d., though they could probably be bought for this month's shipment at 23s. to 23s. 6d. Best qualities quote 23s. to 23s. 6d., but some, at any rate, are obtainable at considerably less, where it is a question of keeping the collieries working. Seconds are weak at about 20s.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From our Local Correspondent.

The gas coal trade in Yorkshire and Lancashire is rather weak at the moment, though collieries are not inclined to discount recent prices in view of the advance in wages which will have to be paid within the next few months. With the contracting period just ahead, collieries are asking advances up to 2s. per ton.

As is to be expected at this period of the year, the demand for house coal is declining; but other departments, including exports, are not making up the deficiency. Industries are reported dull, probably to some extent on account of the fact that they have accumulated stocks, though bad trade largely explains the smallness of the demand.

The strike in Germany has not yet affected the market, and while the prices for practically all descriptions of fuel, with the exception of hards, have been discounted, there is a decrease in the amount of business available. Prices at the week-end at Hull were: Bunkers—Yorkshire, Derby, and Notts. large screened steam, f.o.b. Humber ports, 23s. per ton. Cargo for export, f.o.b. usual shipping ports—best Yorkshire hards, Association, 27s. 3d.; Derby best hards, 25s. 6d.; West Yorks Hartleys, 23s. to 24s.; South Yorks washed doubles, 25s. 6d.; ditto singles, 25s. 3d.; dry doubles, 19s. 6d.; South Yorks washed smalls, 19s.; Derby slack, 1 in., 16s.; South Yorks rough slack, 17s.; gas coke, 36s. 3d.; foundry furnace coke, 27s. to 28s.; washed smithy peas, 26s. 6d. to 28s. 6d.; thirds, 24s.; South Yorks washed trebles, 24s. 6d. per ton.

COAL TRADE IN THE MIDLANDS.

From our Local Correspondent.

The market is in a quiescent state. There is very little business passing either in gas coal or any other description of fuel. Gas engineers are taking soundings; but there is no very clear indication of the probable course of prices. Forewarnings as to the stiffening of new contract terms cannot be regarded as without significance, for the increase in production costs under the new agreement with the miners will have to be found somewhere, and the argument for an equalization of its incidence is difficult to resist. As regards industrial coals and household grades, prices are still regarded as artificial, and no new business is being placed which can be postponed. Most of the pits have been reduced to short-time working, including several that have been going at full speed for more than a year. In order to relieve stocks, lower prices have been accepted by some of the collieries. This applies more especially to domestic supplies. Householders are not to be persuaded that deflation will not go considerably further before midsummer. Collieries declare their intention to limit the summer prices to June and July. It is hoped by these means to induce householders to lay in stocks earlier, and so avoid the evils of congestion later in the year.

There is plenty of coke about. Blast furnacemen say they can effect occasional deals of spot lots at less than 24s. at ovens.

London County Council and the Sale of Coke.

At the meeting of the London County Council last week, the report of the Public Control Committee with regard to the sale of coke [*ante*, p. 544], which had been held over from the previous meeting, again appeared on the agenda, together with the following amendment to the recommendations, moved by Mr. W. C. Johnson and seconded by Mr. H. Arthur Baker: "That the following be added—and that a standard of dryness should be prescribed." Mr. Johnson obtained permission to withdraw this amendment and substitute the following: "And that it should be made an offence to water coke with a view fraudulently to increase its weight." Mr. Cyril Jacobs (Chairman of the Public Control Committe) expressed his willingness to accept the latter amendment, but, after a short discussion as to an undertaking said to have been given at the meeting of the General Purposes Committee the previous day, it was decided again to postpone consideration of the whole matter.

Price Reduction at Sowerby Bridge.—The Sowerby Bridge Gas Committee decided last week to reduce the price of gas by 9d. per 1000 c.ft., to date from April 1, bringing the price down to 2s. 6d. per thousand within the Council's area, subject to 10 p.ct. discount, and to 3s. in outside areas. The low price is welcomed as some compensation for a recent increase in the rates.

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